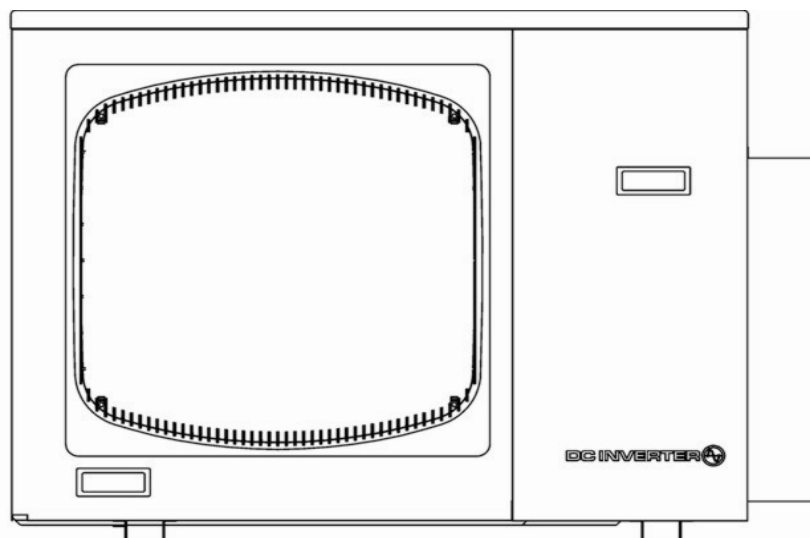
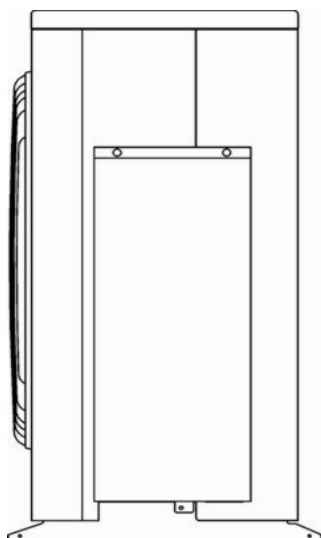


TECHNICAL DATA & SERVICE MANUAL

OUTDOOR UNIT: **GR9FI65R5IAA**

TRIAL SPLIT SYSTEM AIR CONDITIONER

Model No.	Product Code No.
GR9FI65R5IAA	38.7107.102



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 order 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.

0.8180.531.00 05/2007
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 testing 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.

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1. OPERATING RANGE

GR9FI65R5IAA			
	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

GR9FI65R5IAA

Power source	220 - 240 V ~ 50 Hz
--------------	---------------------

Voltage rating	230 V
----------------	-------

Performance *		MPA9FIB0R5I x1 + MTAFIA0R5I x2	Cooling	Heating
Capacity		kW	6,50	7,30
		BTU/h	22179	24909
Air circulation (High)		m ³ /h	600	
Moisture removal (High)		Liters/h	1,5	-

Electrical Rating			Cooling	Heating
Available voltage range	V		198 ~ 264	
Running amperes	A		8,90	7,50
Power input	W		2000	1690
Power factor	%		98	98
C.O.P.	W/W		3,25	4,32
Compressor locked rotor amperes	A		-	-

Features				
Fan speed			3 (hi755 - me395 - lo258)	
Compressor			Twin Rotary (Hermetic) DC inverter	
Refrigerant / Amount charged at shipment		g	R410A / 2700	
Refrigerant control			Electronic expansion valve	
Power noise level	Hi	dB-A	64	
Refrigerant tubing connections			Flare type	
Max. allowable tubing length at shipment		m	see installation instruction	
Refrigerant tube diameter	Narrow tube	mm(in.)	6,35 (1/4)	
	Wide tube	mm(in.)	9,52 (3/8) - 12,7 (1/2)	

Dimensions & Weight				
Unit dimensions	Height	mm	735	
	Width	mm	1030	
	Depth	mm	340/400	
Package dimensions	Height	mm	900	
	Width	mm	1140	
	Depth	mm	420	
Weight	Net	kg	64,0	
	Shipping	kg	70,0	
Shipping volume		m ³	0,43	

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

GR9FI65R5IAA

Compressor		
Type		Twin Rotary (Hermetic) DC inverter
Compressor model		TNB220FLHMT
Nominal input (compressor rating condition)	W	2200
Compressor oil...Amount	cc	FV50S 870
Coil resistance (Ambient temp. 20°C)	Ω	0,64
Overload relay		Software Protection
Safety devices	Type	-
	Operating Temp. Open	°C
	Close	°C

Controller PCB		
Part No.		sac dci ODU
Controls		Microprocessor
Control circuit fuse		6,3x32 - 12,5A

Expansion PCB		
Part No.		sac expansion multi dci
Controls		---
Control circuit fuse		---

Fan & Fan Motor		
Type		Propeller
Q'ty Ø	Nr. ... mm	1.... Ø 460
Fan motor model...Q'ty		KFC6T-91C5P
No. Of poles...rpm		6 ... 3 speed (755 - 395 - 258)
Nominal output	W	65,66
Coil resistance (Ambient temp. 25 °C)	Ω	BRN-WHT: 127.3
	Ω	WHT-VLT: 56.73
	Ω	VLT-YEL: 15.04
	Ω	YEL-PNK: 7.235
Safety devices	Type	Thermal Protector
	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	0,60

External Finish	Acrylic baked-on enamel finish
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2-3 Other Component Specifications

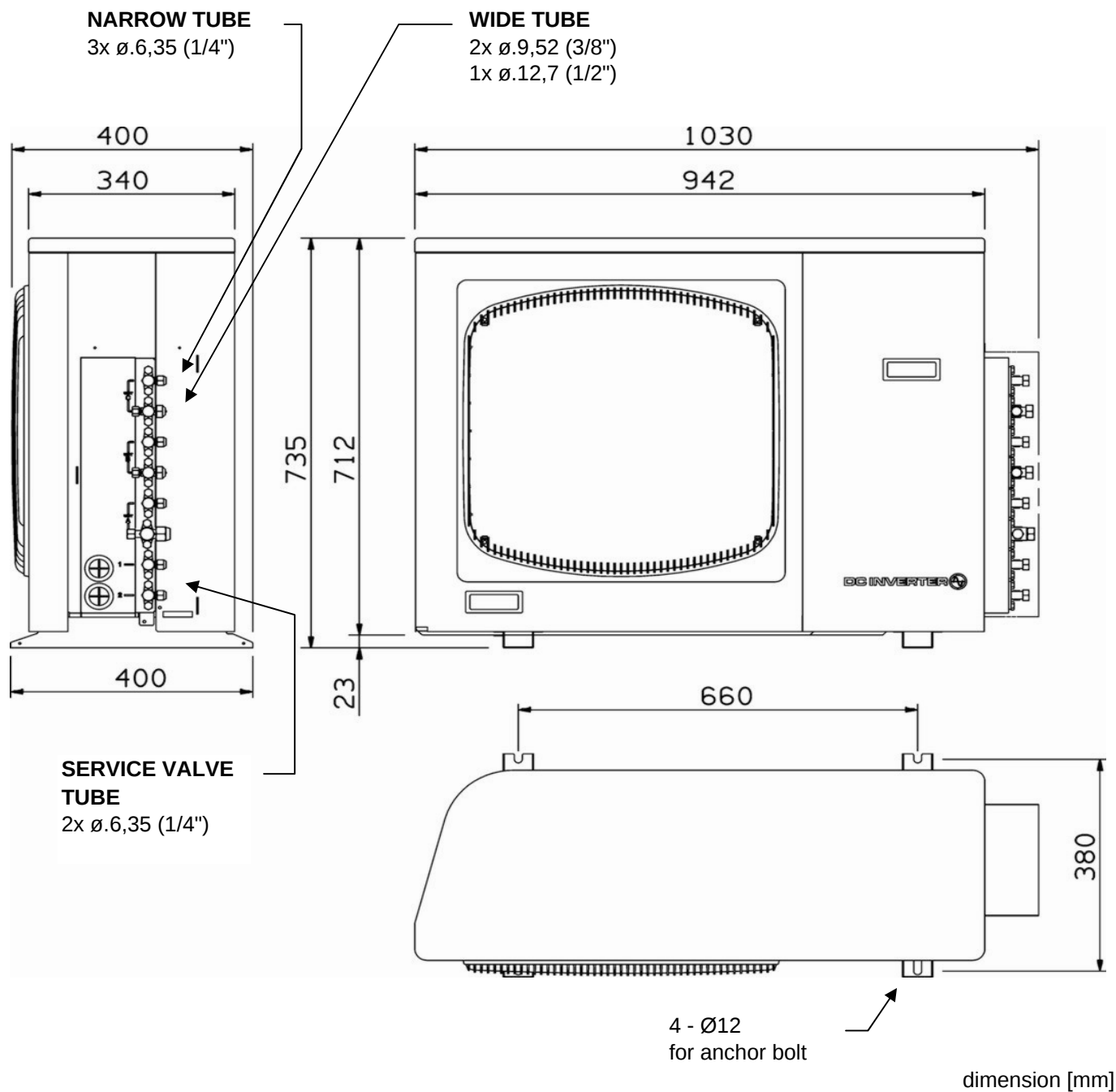
GR9FI65R5IAA

4-way Valve (20S)		LDK-41 (Coil) V2-410060-300 (Valve)	
Coil rating		AC 220/240 V, 50 Hz	
Coil resistance	Ω (at 20°C)	1600 $\pm$ 5%	
Electronic Expansion Valve A		UKV-U030E (Coil) UKV-18D31 (Valve)	
Coil rating		DC 12 V	
Coil resistance / phase	Ω (at 20°C)	46 $\pm$ 3%	
Electronic Expansion Valve B-C		CAM-MD12EX(Coil) ZCAM-BD15EX (Valve)	
Coil rating		DC 12 V	
Coil resistance / phase	Ω (at 20°C)	46 $\pm$ 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 $\pm$ 10%	
Thermistor (coil sensor)		NTC-THERMISTOR	
Resistance	k Ω	10 at 25 °C	
Thermistor (compressor discharge sensor)		NTC-THERMISTOR	
Resistance	k Ω	10 at 25 °C	
Thermistor (inlet air sensor)		NTC-THERMISTOR	
Resistance	k Ω	10 at 25 °C	
Thermistor (wide tube A sensor)		NTC-THERMISTOR	
Resistance	k Ω	10 at 25 °C	
Thermistor (narrow tube A sensor)		NTC-THERMISTOR	
Resistance	k Ω	10 at 25 °C	
Thermistor (wide tube B sensor)		NTC-THERMISTOR	
Resistance	k Ω	10 at 25 °C	
Thermistor (narrow tube B sensor)		NTC-THERMISTOR	
Resistance	k Ω	10 at 25 °C	
Thermistor (wide tube C sensor)		NTC-THERMISTOR	
Resistance	k Ω	10 at 25 °C	
Thermistor (narrow tube C sensor)		NTC-THERMISTOR	
Resistance	k Ω	10 at 25 °C	
Crank case heater		20W - RESISTANCE	
Resistance	Ω (at 20°C)	2640 $\pm$ 10%	
Base heater		75W - FLEXELEC CSC2	
Resistance	Ω (at 20°C)	705 $\pm$ 10%	

DATA SUBJECT TO CHANGE WITHOUT NOTICE

3. DIMENSIONAL DATA

GR9FI65R5IAA



4. REFRIGERANT FLOW DIAGRAM

4-1 Trial Split System Refrigerant Flow Diagram

Outdoor Unit: **GR9FI65R5IAA**

Indoor Unit A: **MPA9FIB0R5I..**

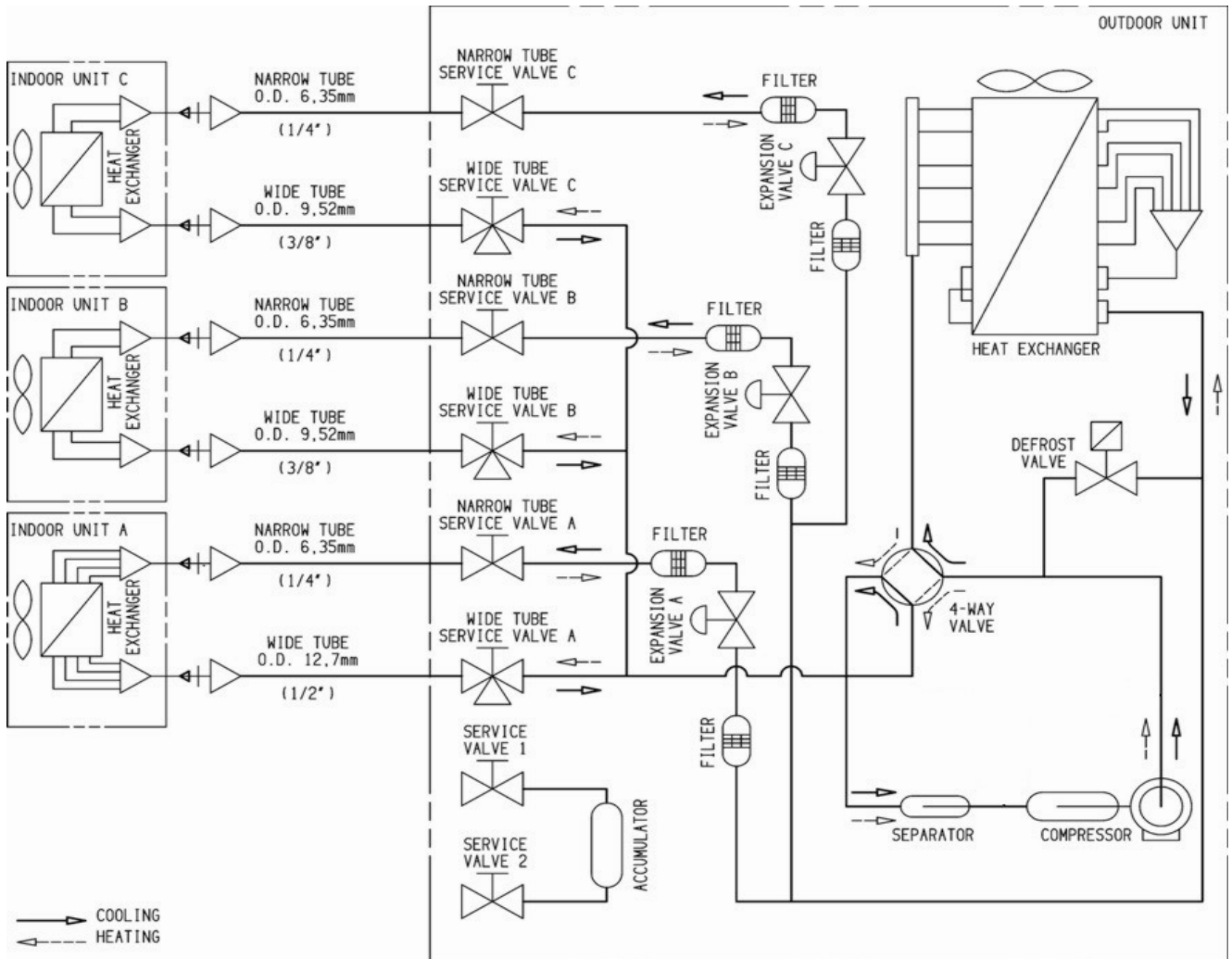
MTAFIA0R5I..

Indoor Unit B: **MTAFIA0R5I..**

MTAFIA0R5I..

Indoor Unit C: **MTAFIA0R5I..**

MTAFIA0R5I..



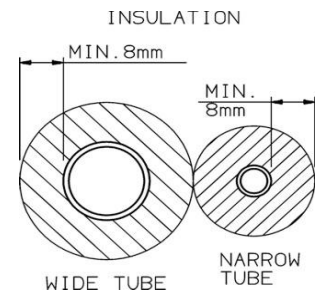
Insulation of Refrigerant Tubing

IMPORTANT

Because expansion valve 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. 8mm.

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.



4-2 Dual Split System Refrigerant Flow Diagram

Outdoor Unit: **GR9FI65R5IAA**

Indoor Unit A:

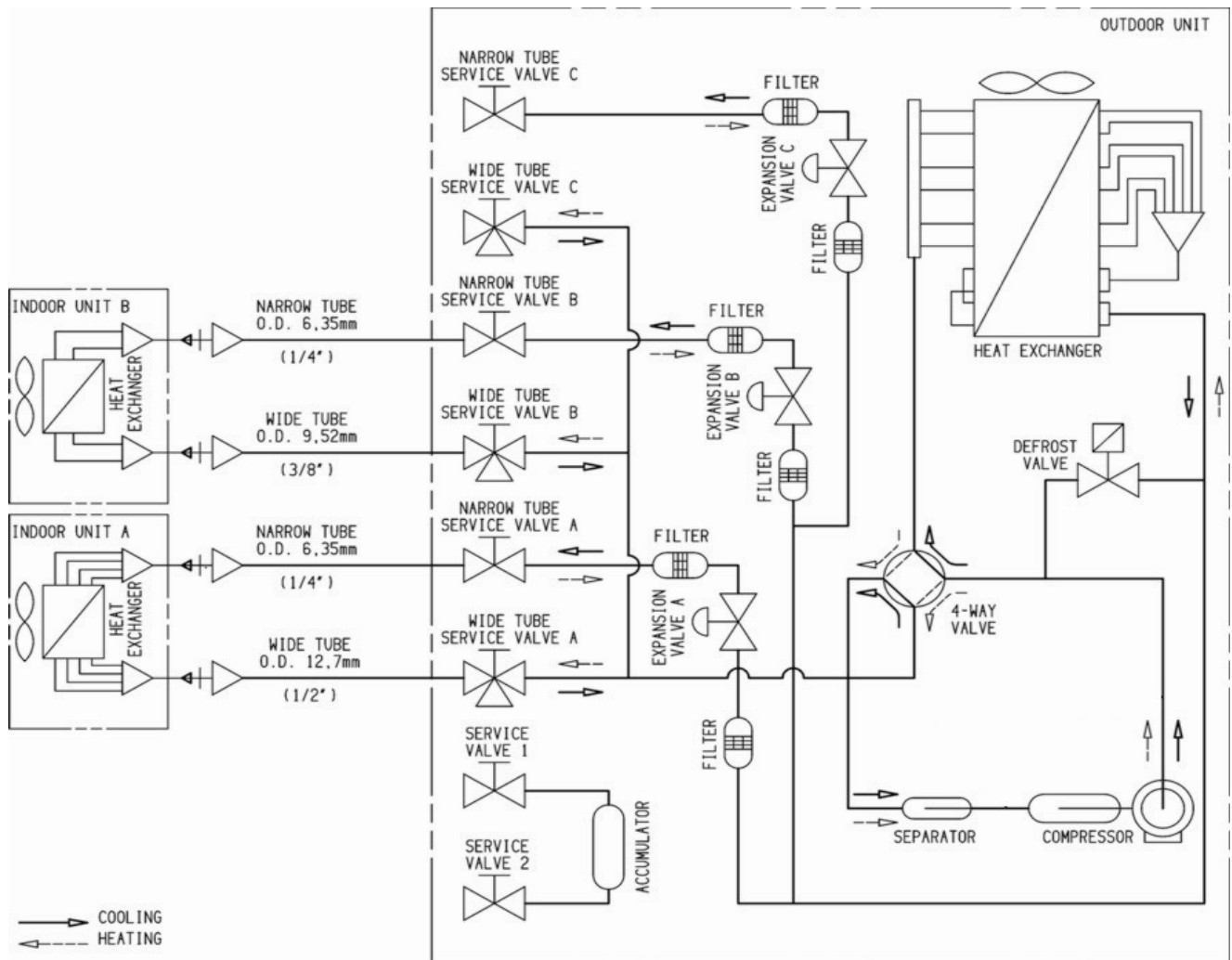
MPA9FIB0R5I..

Indoor Unit B:

MTAFIA0R5I..

Indoor Unit C:

--



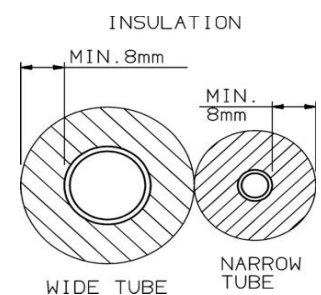
Insulation of Refrigerant Tubing

IMPORTANT

Because expansion valve 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. 8mm.

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.



4-3 Mono Split System Refrigerant Flow Diagram

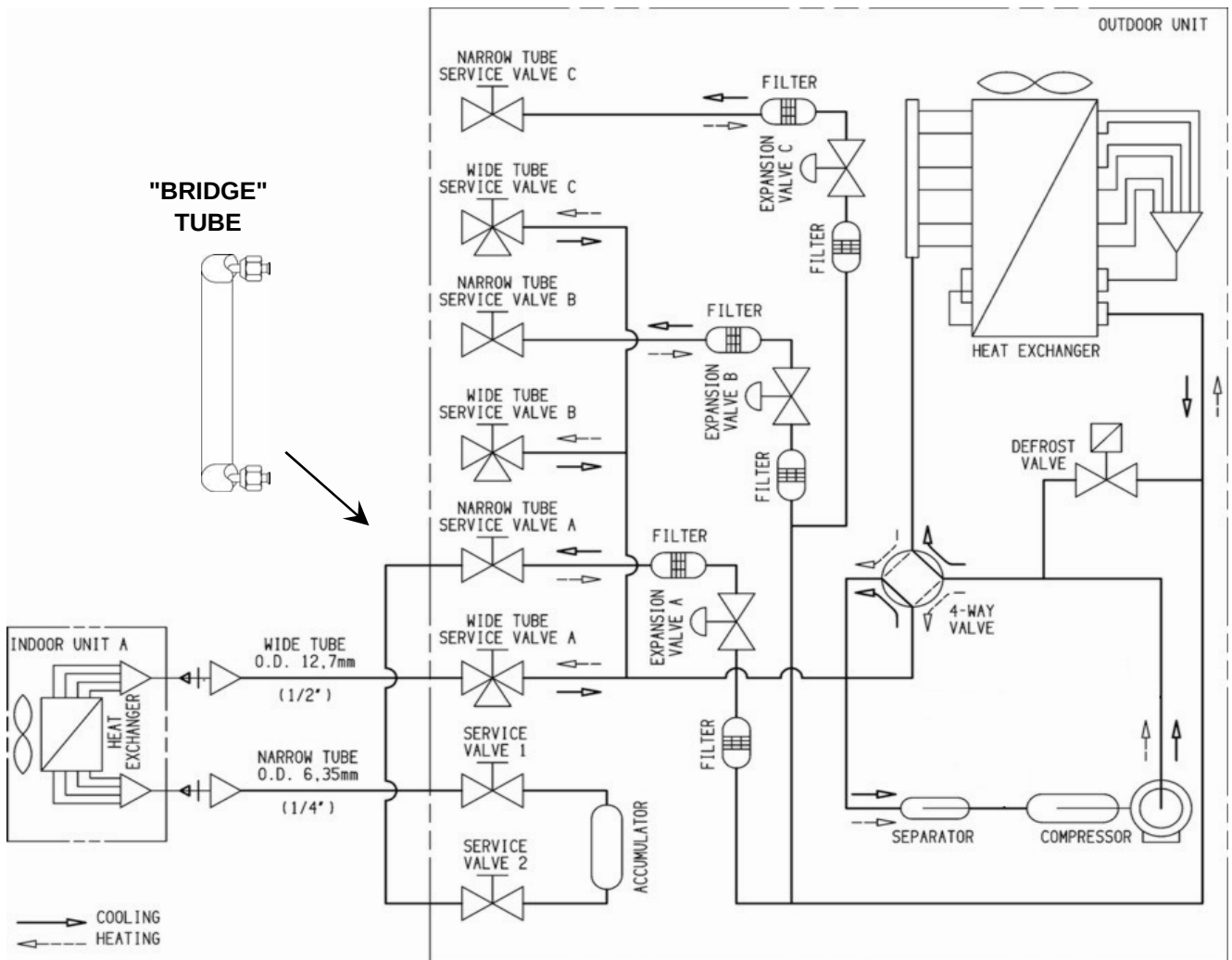
Outdoor Unit: **GR9FI65R5IAA**

Indoor Unit A: **MPA9FIB0R5I..**

Indoor Unit B: - -

Indoor Unit C: - -

- -



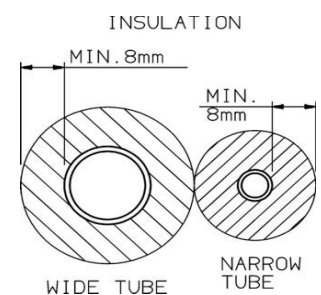
Insulation of Refrigerant Tubing

IMPORTANT

Because expansion valve 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. 8mm.

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.

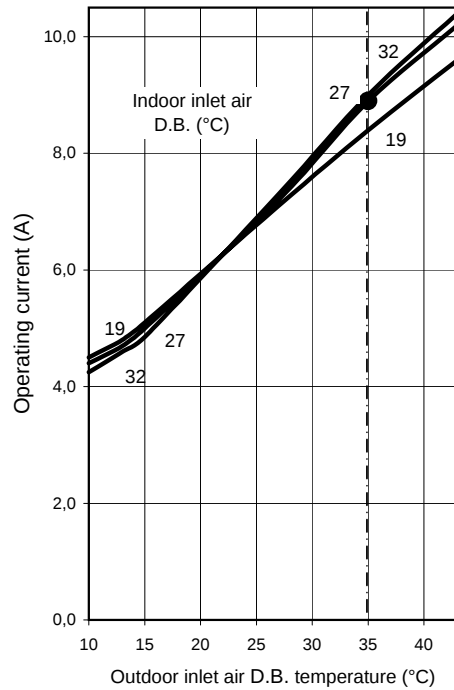


5. PERFORMANCE DATA

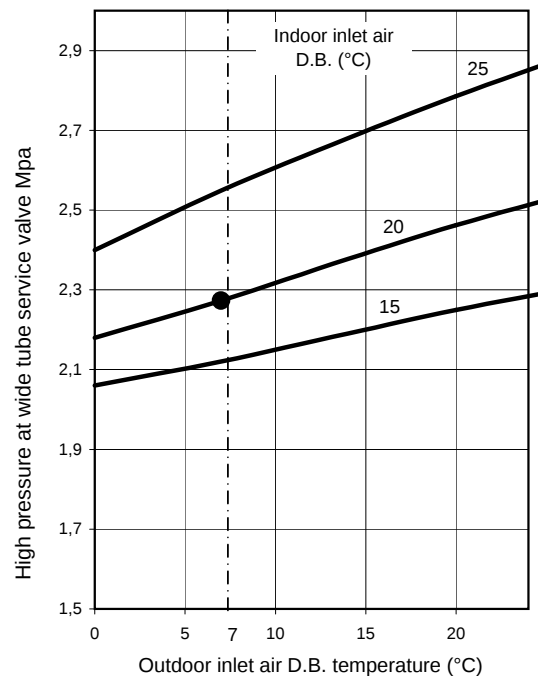
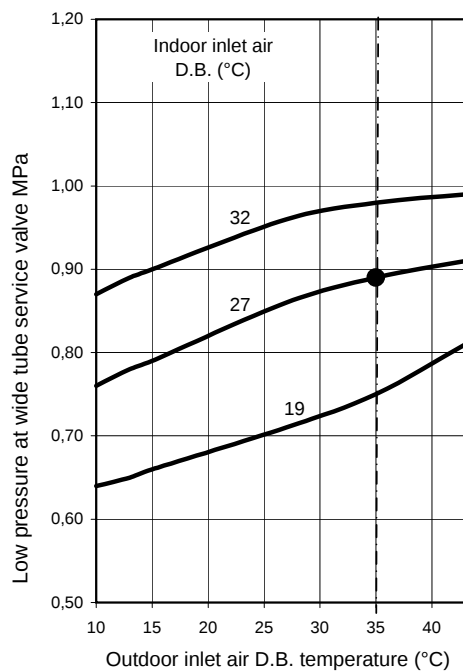
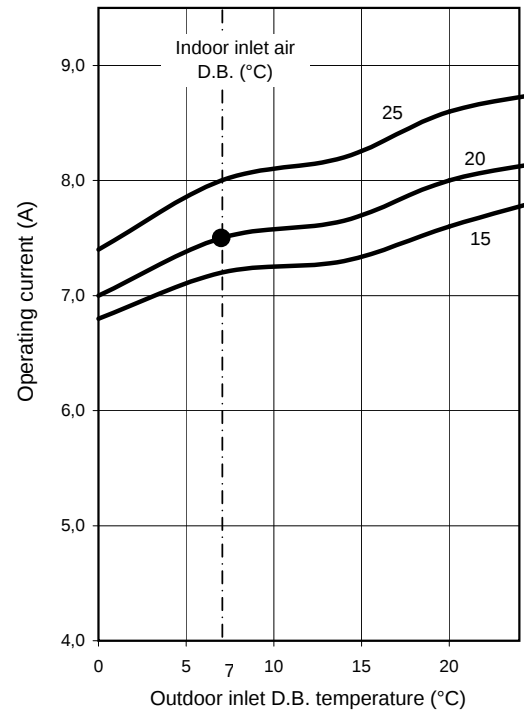
5-1 Performance charts

GR9FI65R5IAA

■ Cooling Characteristics



■ Heating Characteristics



Note

Overload prevention operates to protect the air conditioner when outdoor ambient temperature reaches extremely high values in heating mode.

● Points of Rating condition

Data referred to **MPA9FIB0R5I x1 + MTAFAIA0R5I x2**

6. ELECTRICAL DATA

6-1 Electrical characteristics

Outdoor unit: **GR9FI65R5IAA**

COOLING

			3 Indoor Unit	Outdoor unit	Complete Unit
			Fan Motor	Fan Motor + Compressor	
Performance at			230 V - 1 Phase - 50 Hz		
Rating conditions	Running Amps.	A	0,66	8,24	8,9
	Power input	kW	0,148	1,852	2,000

Rating Conditions: Indoor Air Temperature 27°C D.B. / 19°C W.B.
Outdoor Air Temperature 35°C D.B. / 24°C W.B.

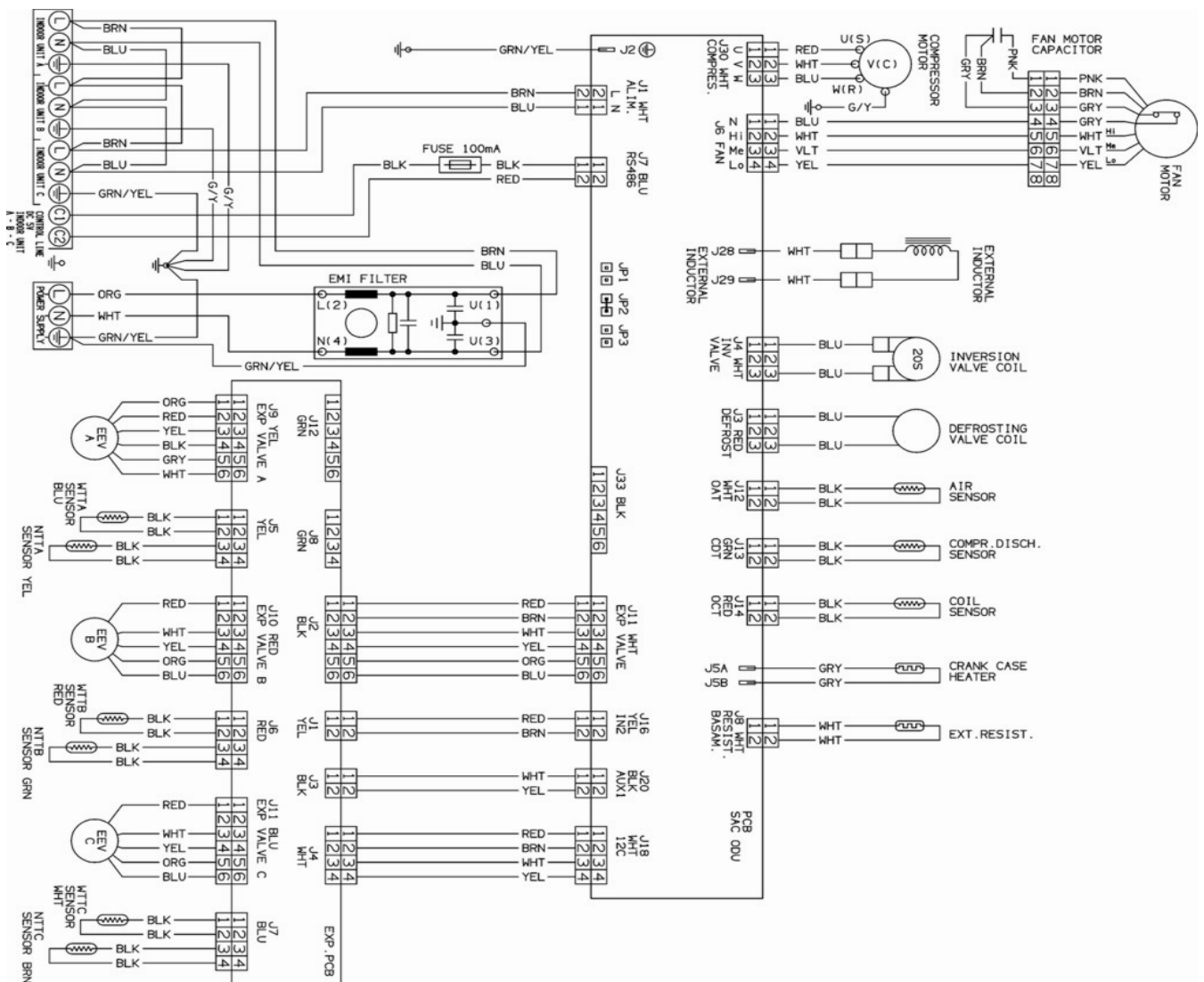
HEATING

			3 Indoor Unit	Outdoor unit	Complete Unit
				Fan Motor + Compressor	
Performance at			230 V - 1 Phase - 50 Hz		
Rating conditions	Running Amps.	A	0,66	6,84	7,5
	Power input	kW	0,148	1,542	1,690

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

NOTE: Data referred to **3** indoor unit, **MPA9FIB0R5I x1 + MTAFIA0R5I x2**
For other indoor unit models there could be some differences.

GR9FI65R5IAA



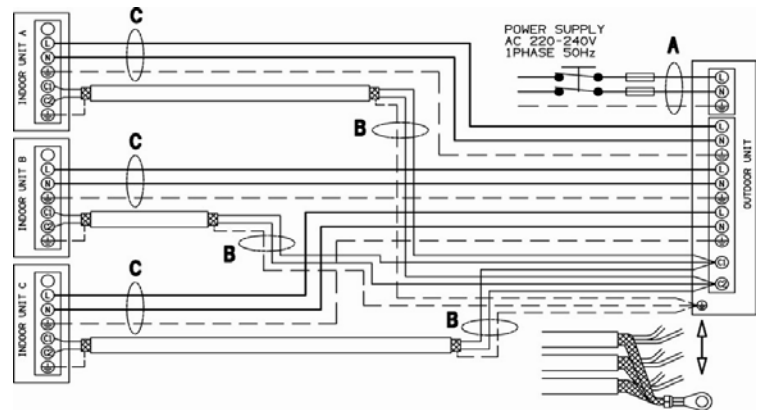
6-3 Trial Split System Wiring Diagram

Outdoor unit:

GR9FI65R5IAA

Indoor unit:

MPA9FIB0R5I x1 + MTAFIA0R5I x2



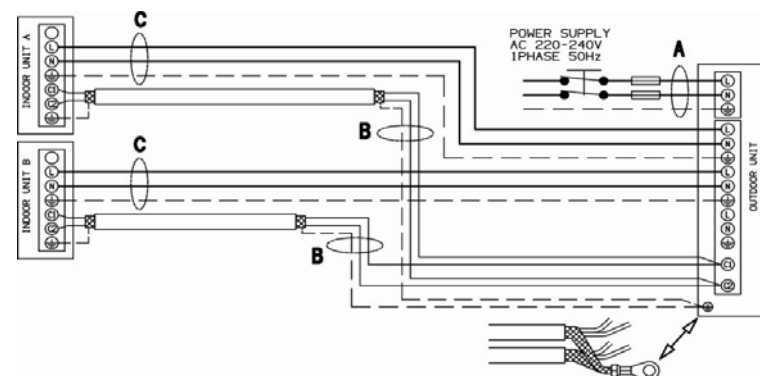
6-4 Dual Split System Wiring Diagram

Outdoor unit:

GR9FI65R5IAA

Indoor unit:

MPA9FIB0R5I + MTAFIA0R5I



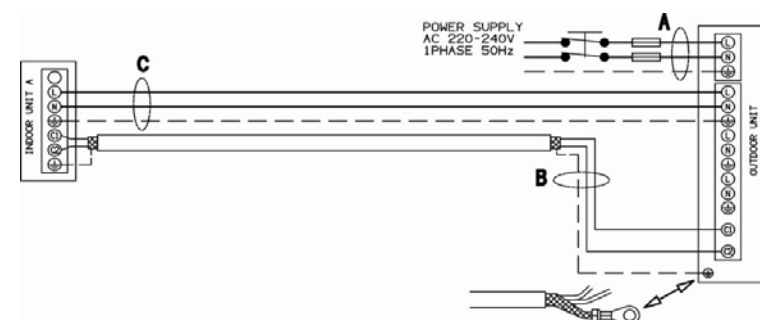
6-5 Mono Split System Wiring Diagram

Outdoor unit:

GR9FI65R5IAA

Indoor unit:

MPA9FIB0R5I



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 (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.

17	✱	×	✱	×	✱	WRONG CONNECTION PIPES	system does not operate. To restart the system, power re-setting (off-on) is required note: before restoring power, adjust the dip-switch status on idu according to the connection pipes
16	✱	×	×	✱	✱	NTTC PROBE DAMAGED OR NOT CONNECTED	system does not operate. as soon as fault is cleared, the system automatically restart after 3 min during this time, the signalling is showed
15	×	✱	×	✱	✱	WTTC PROBE DAMAGED OR NOT CONNECTED	
14	✱	×	✱	×	×	NTTB PROBE DAMAGED OR NOT CONNECTED	
13	×	✱	×	✱	×	WTTB PROBE DAMAGED OR NOT CONNECTED	
12	×	×	✱	×	✱	NTTA PROBE DAMAGED OR NOT CONNECTED	
11	×	×	×	✱	×	WTTA PROBE DAMAGED OR NOT CONNECTED	
10	×	×	✱	×	×	CDT PROBE DAMAGED OR NOT CONNECTED	
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	×	×	✱	✱	✱	PFC FAULT	
2	×	✱	✱	✱	×	FAULT ON INDOOR UNITS	
1	✱	✱	✱	×	×	COMUNICATION ERROR INDOOR UNIT A-B	
RANK	DL5	DL4	DL3	DL2	DL1	DIAGNOSIS CONTENTS	EFFECTS



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