

# TECHNICAL DATA & SERVICE MANUAL

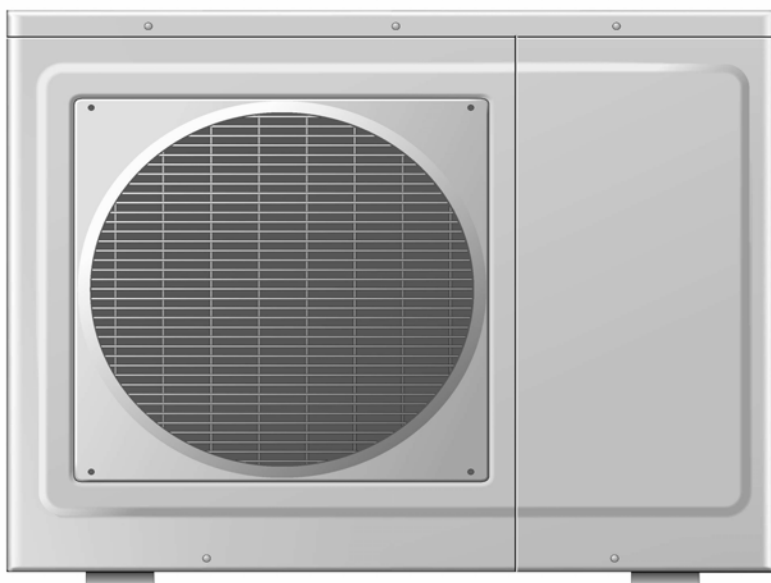


**OUTDOOR UNIT: AE52AC/ACL  
AE52AH  
AE52AC3/ACL3  
AE52AH3**

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## SPLIT SYSTEM AIR CONDITIONER

Model No.	Product Code No.
AE52AC	387031044
AE52AC3	387031045
AE52AH	387031049
AE52AH3	387031050
AE52ACL	387031057
AE52ACL3	387031058



## 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.

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### SPECIAL PRECAUTIONS

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- 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.**

- 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

	Temperature	Indoor Air Intake Temp.	Outdoor Air Intake Temp.
Cooling	Maximum	32°C D.B. / 23°C W.B.	46°C D.B.
	Minimum	21°C D.B. / 15°C W.B.	10°C D.B. / -10°C D.B. (*)
Heating	Maximum	27°C D.B.	24°C D.B. / 18°C W.B.
	Minimum	-	-9°C D.B. / -10°C W.B.

(\*) Only for models:  
AE52ACL  
AE52ACL3

## 2. SPECIFICATIONS

### 2-1 Unit Specifications

#### AE52AC/ACL

Power source	220 - 240V ~ 50Hz
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Voltage rating	230V
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Performance *		AW52AL	Cooling	Heating
Capacity		kW	5,50	-
		BTU/h	18760	-
Air circulation (High)		m³/h	930	
Moisture removal (High)		Liters/h	1,8	-

Electrical Rating		Cooling	Heating
Available voltage range	V	198 ~ 264	
Running amperes	A	7,5	-
Power input	W	1690	-
Power factor	%	98	-
C.O.P.	W/W	3,22	-
Compressor locked rotor amperes	A	43	-

Features			
Fan speed			1(Hi)
Compressor			Rotary (Hermetic)
Refrigerant / Amount charged at shipment	g		R410A / 1540
Refrigerant control			Capillary tube
Power sound level	Hi	dB-A	68
Refrigerant tubing connections			Flare type
Max. allowable tubing length at shipment	m		10
Refrigerant tube diameter	Narrow tube	mm(in.)	6,35 (1/4")
	Wide tube	mm(in.)	12,7(1/2")

Dimensions & Weight			
Unit dimensions	Height	mm	690
	Width	mm	846
	Depth	mm	302
Package dimensions	Height	mm	770
	Width	mm	990
	Depth	mm	430
Weight	Net	kg	56
	Shipping	kg	61
Shipping volume		m³	0,33

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

## AE52AH

<b>Power source</b>	220 - 240V ~ 50Hz
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<b>Voltage rating</b>	230V
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<b>Performance *</b>		<b>AW52AL</b>		<b>Cooling</b>	<b>Heating</b>
Capacity		kW		5,50	5,56
		BTU/h		18760	18960
Air circulation (High)		m <sup>3</sup> /h		930	
Moisture removal (High)		Liters/h		1,8	-

<b>Electrical Rating</b>		<b>Cooling</b>	<b>Heating</b>
Available voltage range	V	198 ~ 264	
Running amperes	A	7,5	7,1
Power input	W	1690	1600
Power factor	%	98	98
C.O.P.	W/W	3,25	3,48
Compressor locked rotor amperes	A	43	43

<b>Features</b>			
Fan speed			1(Hi)
Compressor			Rotary (Hermetic)
Refrigerant / Amount charged at shipment	g		R410A / 1540
Refrigerant control			Capillary tube
Operation Sound	Hi	dB-A	68
Refrigerant tubing connections			Flare type
Max. allowable tubing length at shipment	m		10
Refrigerant tube diameter	Narrow tube	mm(in.)	6,35 (1/4")
	Wide tube	mm(in.)	12,7(1/2")

<b>Dimensions &amp; Weight</b>			
Unit dimensions	Height	mm	690
	Width	mm	846
	Depth	mm	302
Package dimensions	Height	mm	770
	Width	mm	990
	Depth	mm	430
Weight	Net	kg	56
	Shipping	kg	61
Shipping volume		m <sup>3</sup>	0,33

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

## AE52AC3/ACL3

<b>Power source</b>	380 - 415V 3N ~ 50Hz
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<b>Voltage rating</b>	415V
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<b>Performance *</b>		<b>AW52AL</b>		<b>Cooling</b>	<b>Heating</b>
Capacity		kW		5,50	5,56
		BTU/h		18760	18960
Air circulation (High)		m³/h		930	
Moisture removal (High)		Liters/h		1,8	-

<b>Electrical Rating</b>		<b>Cooling</b>	<b>Heating</b>
Available voltage range	V	342 ~ 418	
Running amperes	A	3,06	3,1
Power input	W	1690	1600
Power factor	%	84	79
C.O.P.	W/W	3,25	3,48
Compressor locked rotor amperes	A	26	26

<b>Features</b>			
Fan speed			1(Hi)
Compressor			Rotary (Hermetic)
Refrigerant / Amount charged at shipment	g		R410A / 1700
Refrigerant control			Capillary tube
Operation Sound	Hi	dB-A	68
Refrigerant tubing connections			Flare type
Max. allowable tubing length at shipment	m		10
Refrigerant tube diameter	Narrow tube	mm(in.)	6,35 (1/4")
	Wide tube	mm(in.)	12,7(1/2")

<b>Dimensions &amp; Weight</b>			
Unit dimensions	Height	mm	690
	Width	mm	846
	Depth	mm	302
Package dimensions	Height	mm	770
	Width	mm	990
	Depth	mm	430
Weight	Net	kg	56
	Shipping	kg	61
Shipping volume		m³	0,33

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: AE52AC/ACL  
AE52AH**

<b>Compressor</b>		
Type		Rotary (Hermetic)
Compressor model		PA200X2CS-4KU1
Nominal output	W	4860(at 220V)
Compressor oil...Amount	cc.	VG74...750
Coil resistance (Ambient temp. 25°C)	Ω	C-R:1.85 C-S:2.62
Safety devices	Type	Internal protector
	Overload relay	UP3SE0391-T39
	Operating Temp. Open	°C 120
	Close	°C -
	Operating amp.(Ambient temp.25°C)	35
Run capacitor	μF	45
	VAC	370

<b>Fan &amp; Fan Motor</b>		
Type		Propeller
Q'ty ..... Dia.		1.... Ø 460
Fan motor model...Q'ty		YYK85E-6...1
No. Of poles...rpm (230 V, High)		6...815
Nominal output	W	75
Coil resistance (Ambient temp. 20 °C )	Ω	main:147
	Ω	aux:165
Safety devices	Type	thermistor
	Operating temp. Open	°C 130
	Close	°C -
Run capacitor	μF	4
	VAC	450

<b>Heat Exch. Coil</b>		
Coil		Aluminium plate fin / Copper tube
Rows		2
Fin pitch	mm	1,74
Face area	m <sup>2</sup>	0,542

<b>External Finish</b>	Acrylic baked-on enamel finish
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**Outdoor Unit: AE52AC3/ACL3  
AE52AH3**

<b>Compressor</b>			
Type			Rotary (Hermetic)
Compressor model			NN21YDAMT
Nominal output	W		5500(at 220V)
Compressor oil...Amount	cc.		MEL 56...1300
Coil resistance (Ambient temp. 25°C)	Ω		3,59
Safety devices	Type		Internal protector
	Overload relay		CS01D350H03(SDR-S400)
	Operating Temp. Open	°C	120
	Close	°C	-
	Operating amp.(Ambient temp.25°C)		-

<b>Fan &amp; Fan Motor</b>			
Type			Propeller
Q'ty ..... Dia.			1.... Ø 460
Fan motor model...Q'ty			YYK85E-6...1
No. Of poles...rpm (230 V, High)			6...815
Nominal output	W		75
Coil resistance (Ambient temp. 20 °C )	Ω		main:147
	Ω		aux:165
Safety devices	Type		thermistor
	Operating temp. Open	°C	130
	Close	°C	-
Run capacitor	μF		4
	VAC		450

<b>Heat Exch. Coil</b>			
Coil			Aluminium plate fin / Copper tube
Rows			2
Fin pitch	mm		1,74
Face area	m <sup>2</sup>		0,542

<b>External Finish</b>	
	Acrylic baked-on enamel finish

## 2-3 Other Component Specifications

**Outdoor Unit:**                    **AE52AH**  
**AE52AH3**

<b>4-way Valve (20S)</b>		<b>SHF-9H-35U(Valve)</b>
Coil rating		AC 220/240V,50Hz,7W
Coil resistance	$\Omega$ (at 20°C)	1500

<b>Outdoor sensor</b>		
Resistance	$\Omega$ (at 25°C)	10K $\pm$ 2%

**AE52AC3**  
**AE52AH3**

<b>Negative Phase Relay</b>		
Type		ALPHA-8/1
Rating		AC 380 V, 3-PHASE 50 Hz
Contact Rating		AC 240 V , 2 A
Operation		Positive phase: ON Negative phase: OFF

<b>Power Relay</b>		
Type		GC3-18/01KKTH
Coil Rating		AC 220/230V,50Hz/60Hz
Contact rating	A	20
Coil resistance	$\Omega$	1000 $\pm$ 10%

**AE52AC**  
**AE52ACL**  
**AE52AH**

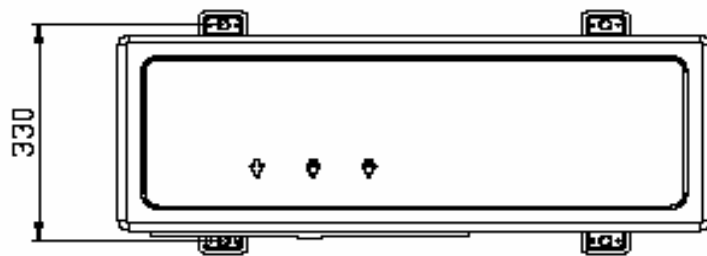
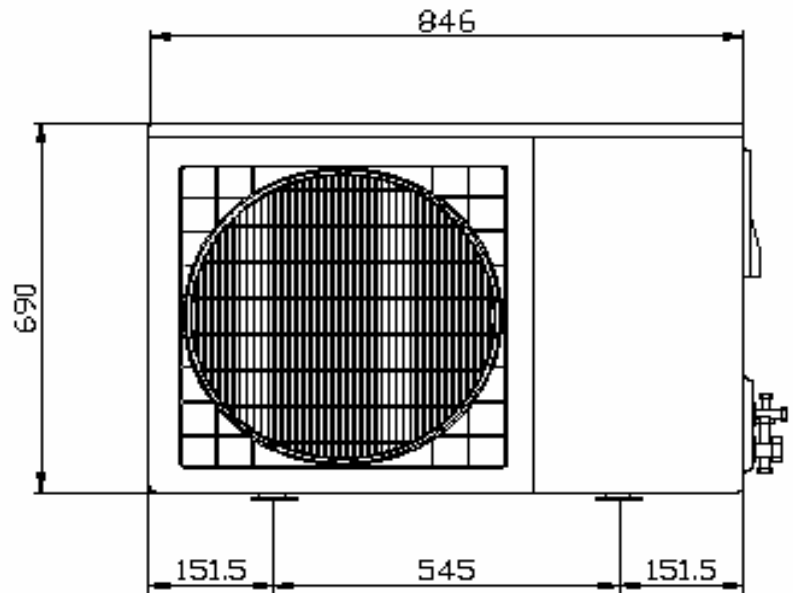
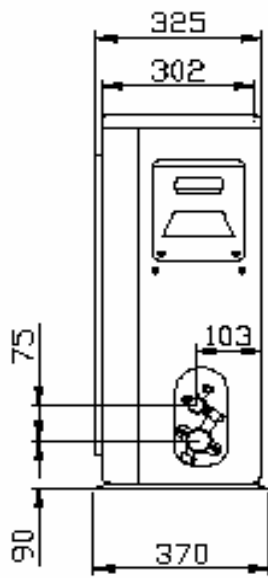
<b>Power Relay</b>		
Type		CJX9B-25S/01TH
Coil Rating		AC 220/230V,50Hz/60Hz
Contact rating	A	25
Coil resistance	$\Omega$	1100 $\pm$ 10%

**AE52ACL**  
**AE52ACL3**

<b>Low ambient kit</b>		<b>RGE-Z1L6-5</b>
Rating		AC 230V 50 Hz
Setpoint	MPa	2,4

### 3. DIMENSIONAL DATA

Outdoor Unit: AE52AC/ACL  
AE52AH  
AE52AC3/ACL3

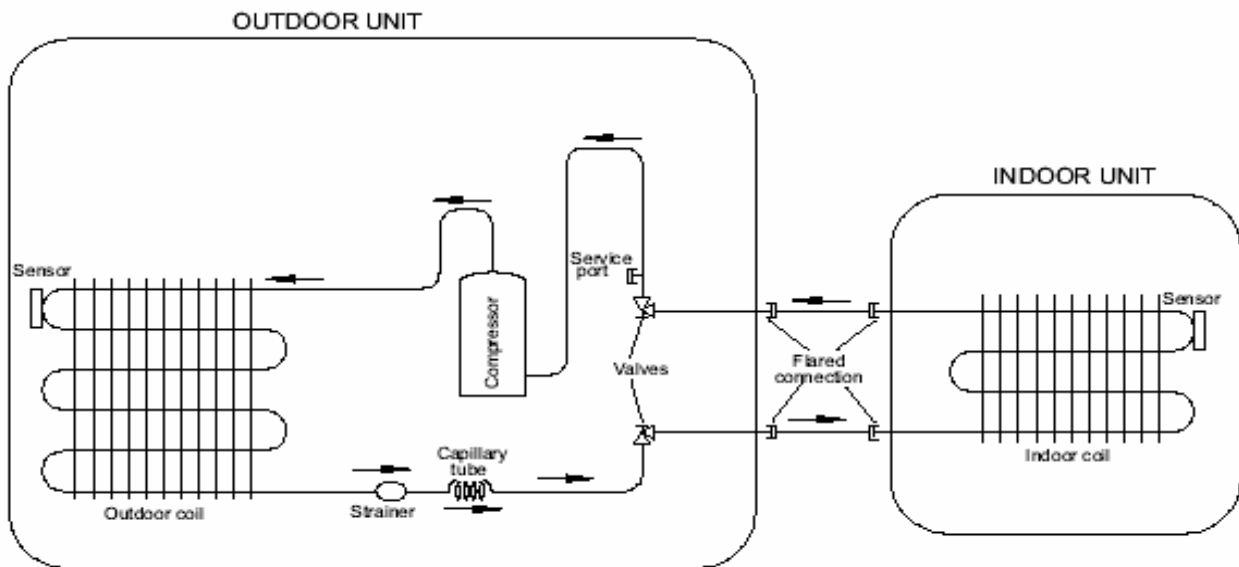


# 4. REFRIGERANT FLOW DIAGRAM

Indoor Unit:

Outdoor Unit:

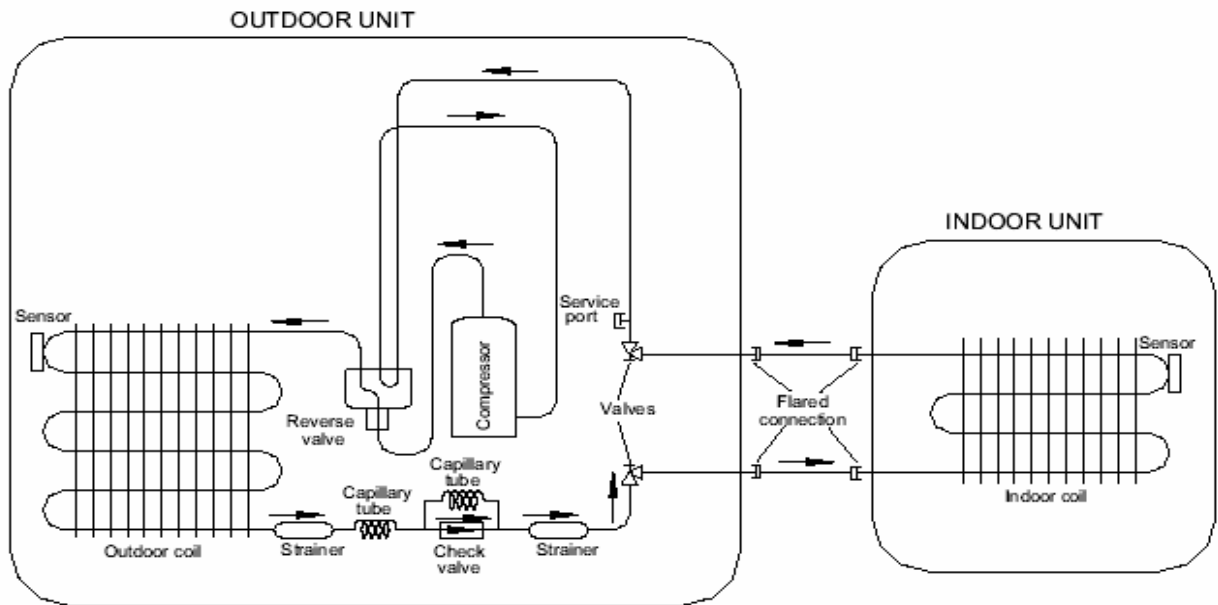
AE52AC/ACL  
AE52AC3/ACL3



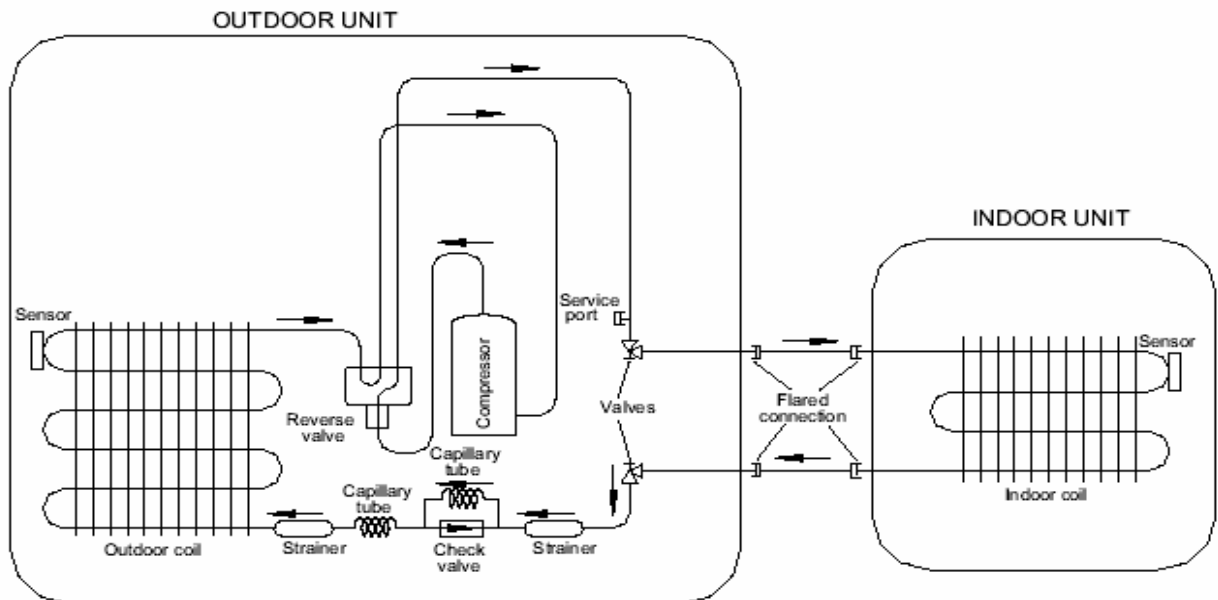
Indoor Unit:

Outdoor Unit:

AE52AH  
AE52AH3



COOLING MODE



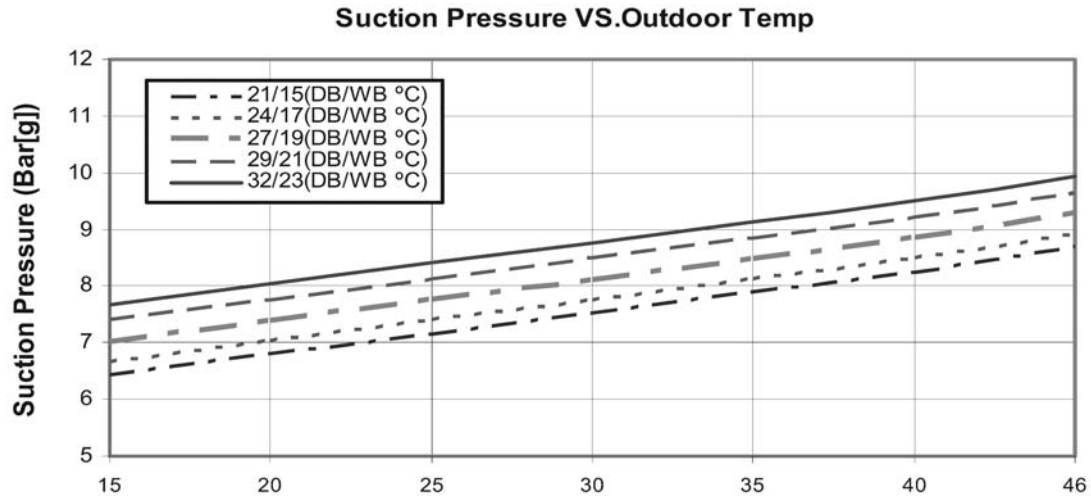
HEATING MODE

# 5. PERFORMANCE DATA

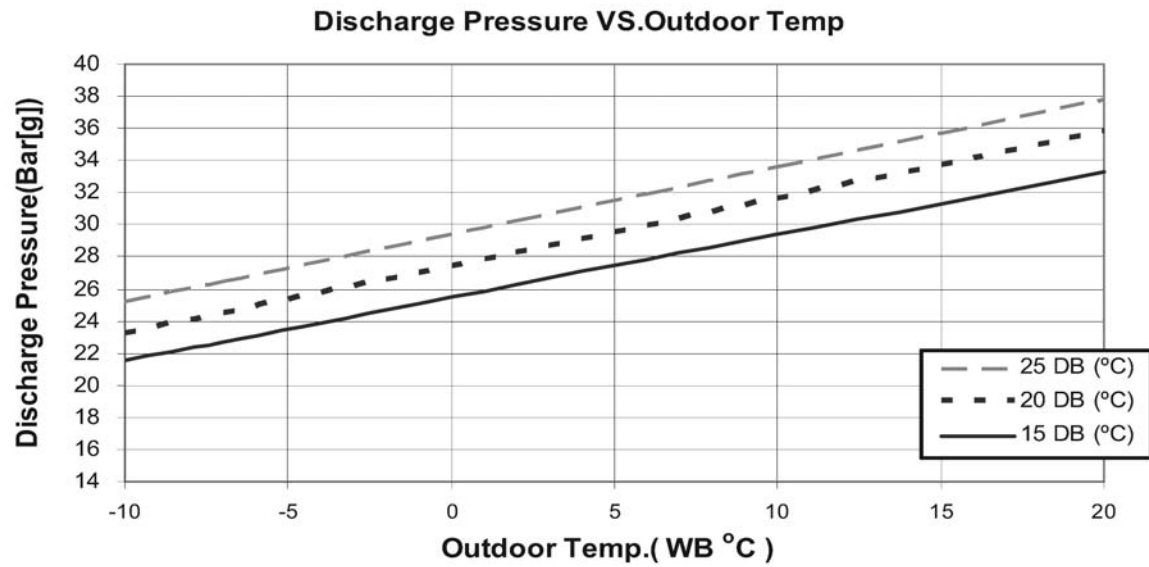
## 5-1 Performance charts

AE52AC/ACL  
AE52AH  
AE52AC3/ACL3  
AE52AH3

### ■ Cooling Characteristics



### ■ Heating Characteristics



## 5-2 Cooling Capacity

OUTDOOR UNIT: **AE52AC/ACL**  
**AE52AH**  
**AE52AC3/ACL3**  
**AE52AH3**

INDOOR UNIT: **AW52AL**

220 - 240V ~ 50Hz

RATING CAPACITY	5,50 kW	moisture removal	1,8 l/h
POWER INPUT	1,69 kW	max power input	2,26 kW
AIR FLOW RATE	930 m <sup>3</sup> /h		

ENTERING AIR DB OU COIL (°C)	DATA	ENTERING AIR WB/DB ID COIL ( °C)				
		15/21	17/24	19/27	21/29	23/32
15	TC	5.61	5.94	6.22	6.49	6.71
	SC	3.96	4.20	4.43	4.33	4.40
	PI	1.20	1.20	1.20	1.21	1.21
20	TC	5.56	5.89	6.16	6.44	6.66
	SC	3.96	4.21	4.45	4.32	4.41
	PI	1.30	1.30	1.31	1.32	1.32
25	TC	5.34	5.72	6.05	6.33	6.55
	SC	3.85	4.13	4.37	4.29	4.40
	PI	1.40	1.41	1.42	1.43	1.44
30	TC	5.01	5.39	5.83	6.05	6.27
	SC	3.66	3.95	4.27	4.18	4.36
	PI	1.51	1.53	1.55	1.56	1.57
35	TC	4.62	5.01	<b>5.50</b>	5.78	6.00
	SC	3.45	3.75	<b>4.10</b>	4.05	4.22
	PI	1.64	1.66	<b>1.69</b>	1.70	1.71
40	TC	4.18	4.57	5.06	5.34	5.56
	SC	3.20	3.53	3.88	3.82	4.00
	PI	1.76	1.79	1.82	1.84	1.86
46	TC	3.63	4.02	4.51	4.79	5.01
	SC	2.91	3.23	3.64	3.57	3.74
	PI	1.94	1.97	2.00	2.03	2.05

### LEGEND

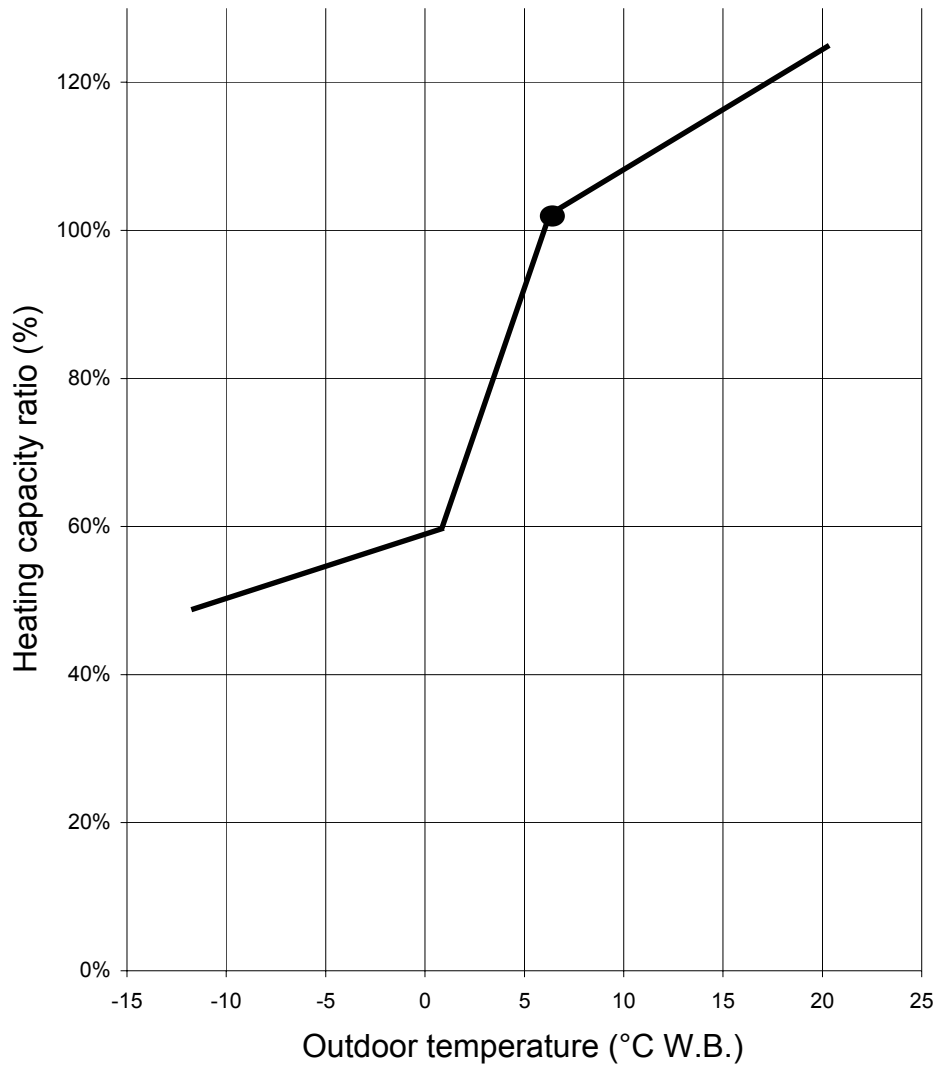
TC – Total Cooling Capacity, kW  
 SC – Sensible Capacity, kW  
 PI – Power Input, kW  
 WB – Wet Bulb Temp., (°C)  
 DB – Dry Bulb Temp., (°C)  
 ID – Indoor  
 OU – Outdoor

### RATING CONDITIONS

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

NOTE: Data related to matching with AW52AL

### 5-3 Heating Capacity



**NOTE**

- 1- Black dot in the chart indicates the following rating condition.  
Indoor: 20°C D.B.  
Outdoor: 7°C D.B. / 6°C W.B.

2- The above chart includes the weighted deicing influence



## 6. ELECTRICAL DATA

### 6-1 Electrical characteristics

**OUTDOOR UNIT:**                    **AE52AC/ACL**  
    **AE52AH**

#### COOLING

			Complete Unit
performance at			230V 1-Phase 50 Hz
Rating conditions	Running Amps.	A	7,50
	Power input	Kw	1,690

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

#### HEATING

			Complete Unit
performance at			230V 1-Phase 50 Hz
Rating conditions	Running Amps.	A	7,10
	Power input	Kw	1,6

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

Full load conditions	Running Amps.	A	11,0
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**OUTDOOR UNIT:****AE52AC3/ACL3  
AE52AH3****COOLING**

			Complete Unit
performance at			380V 3-Phase 50 Hz
Rating conditions	Running Amps.	A	3,06
	Power input	Kw	1,690

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

**HEATING**

			Complete Unit
performance at			380V 3-Phase 50 Hz
Rating conditions	Running Amps.	A	3,10
	Power input	Kw	1,6

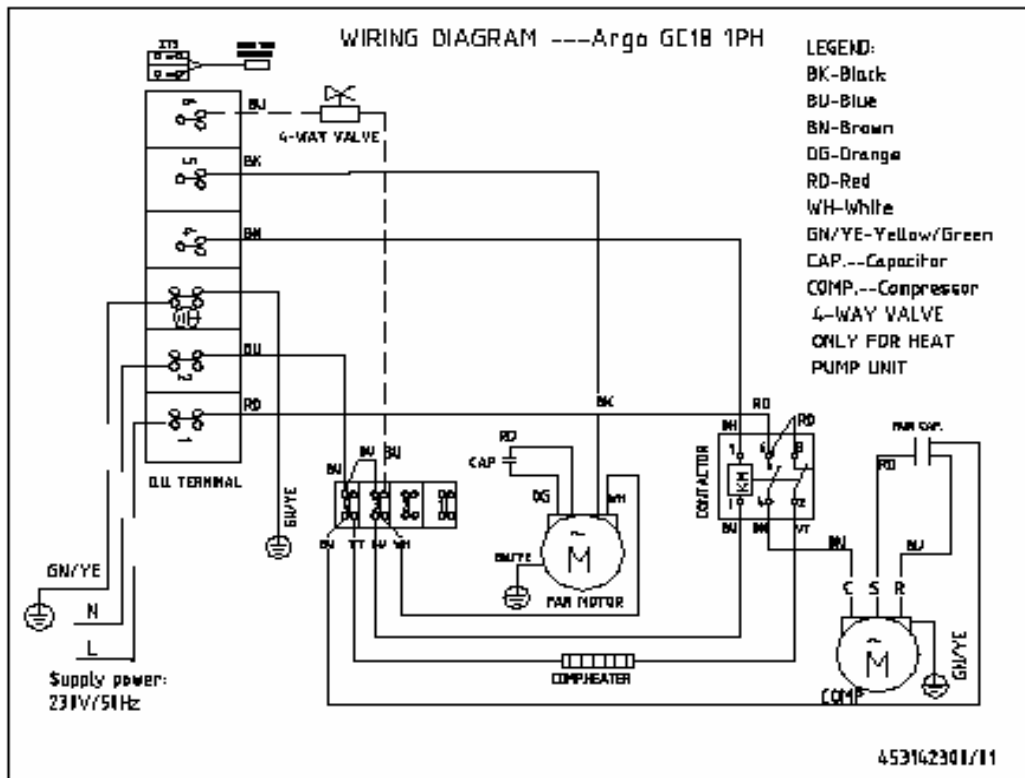
Rating Conditions: Indoor Air Temperature 20°C D.B.  
Outdoor Air Temperature 7°C D.B. / 6°C W.B.

Full load conditions	Running Amps.	A	4,30
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## 6-2 Electric Wiring Diagram

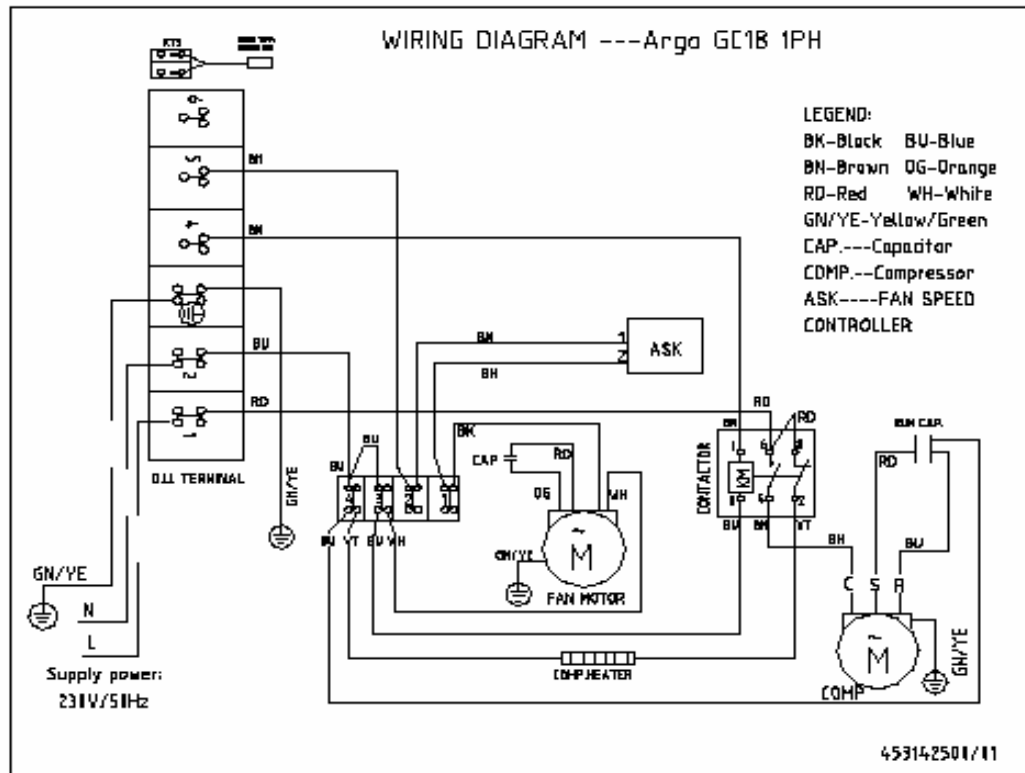
OUTDOOR UNIT:

### AE52AC/AH



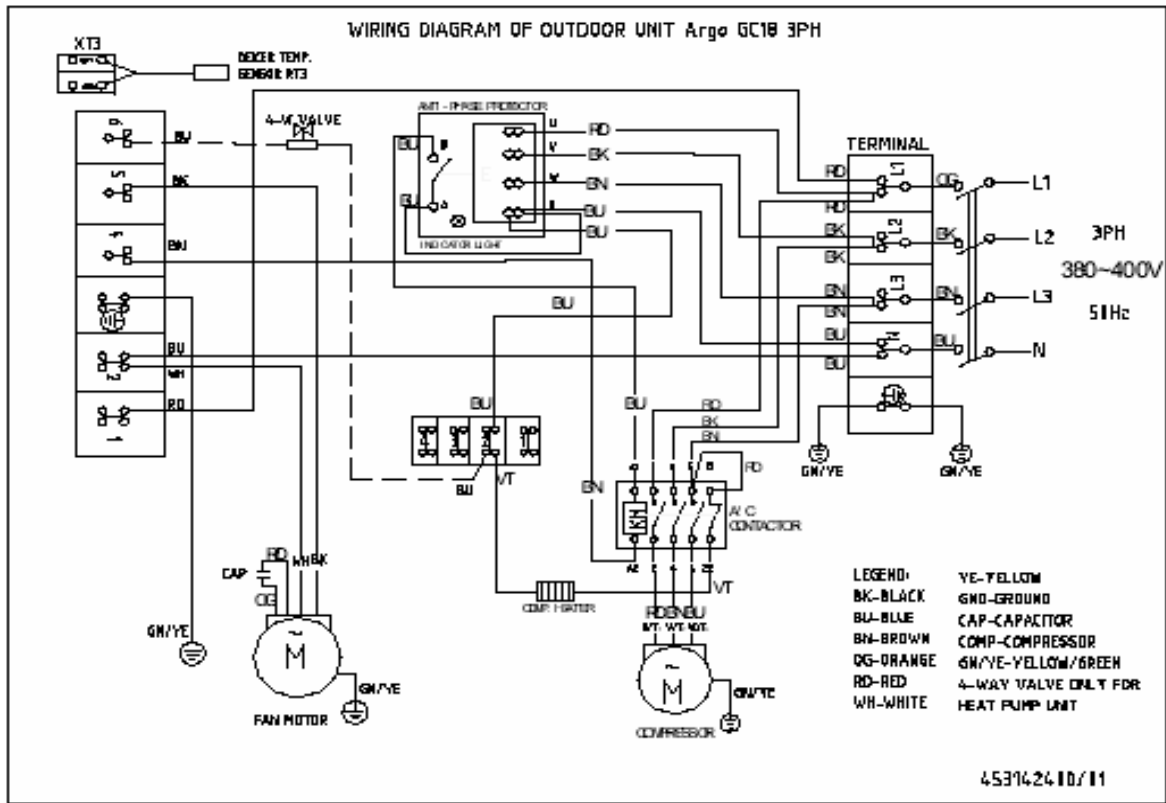
OUTDOOR UNIT:

### AE52ACL



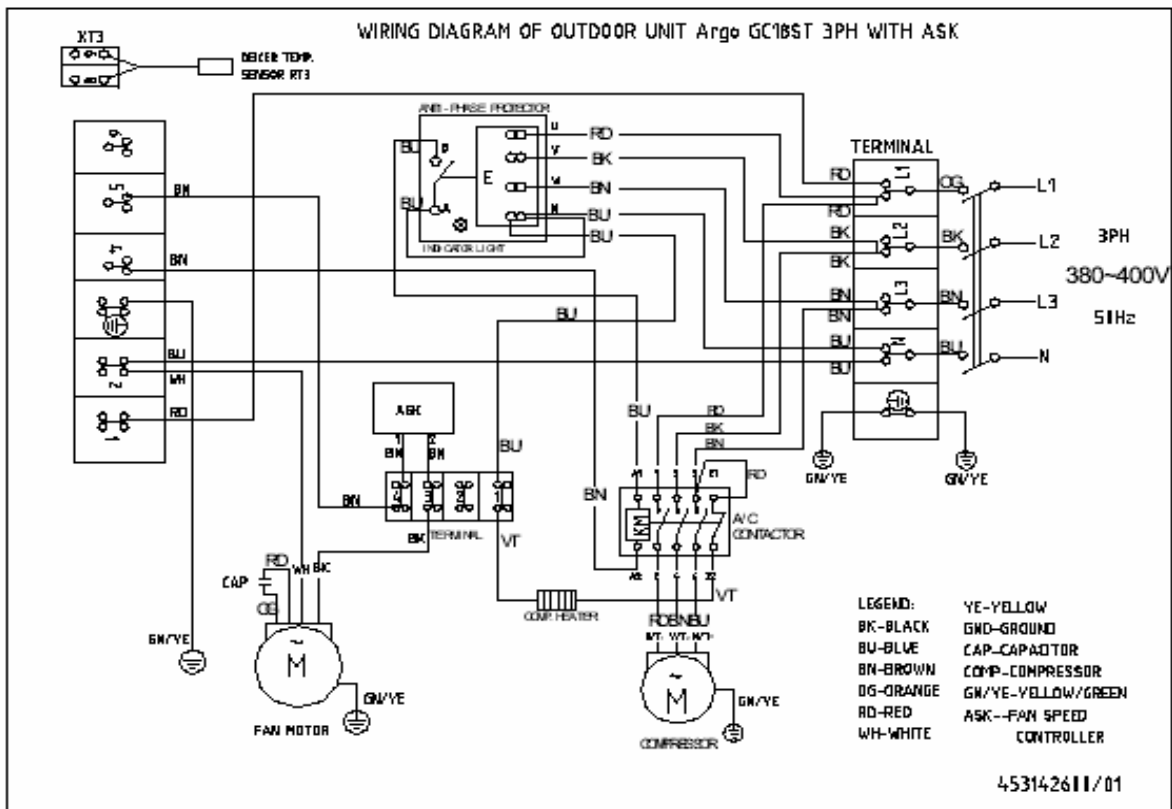
OUTDOOR UNIT:

### AE52AC3/AH3



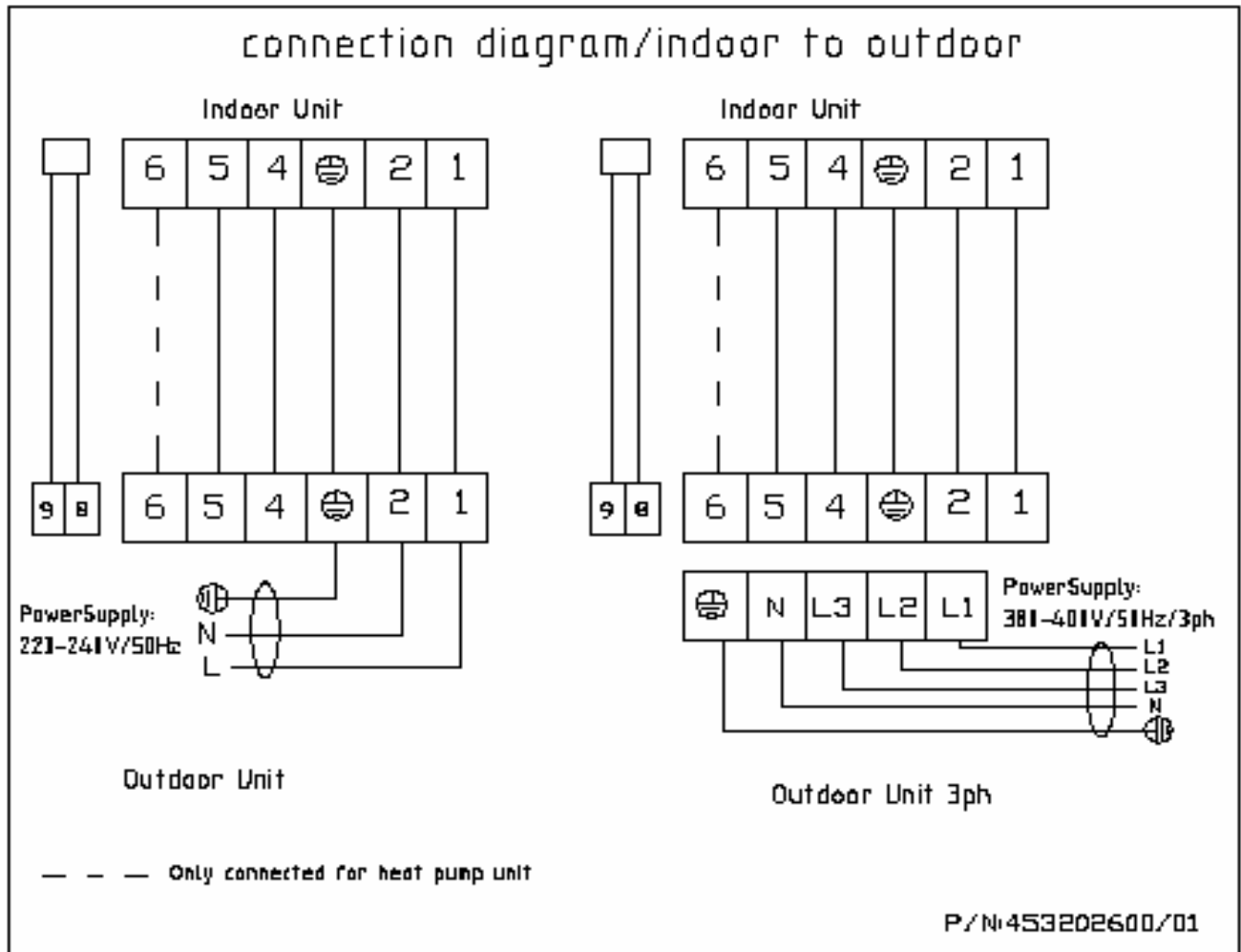
OUTDOOR UNIT:

### AE52ACL3



### 6-3 System Wiring Diagram

**AE52AC/ACL**  
**AE52AH**  
**AE52AC3/ACL3**  
**AE52AH3**



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