

# APMR-V SERIES

Inverter Packaged Air Conditioners



50/60Hz



Range 5 TR to 30 TR  
(20 kW to 105 kW)



## Contents

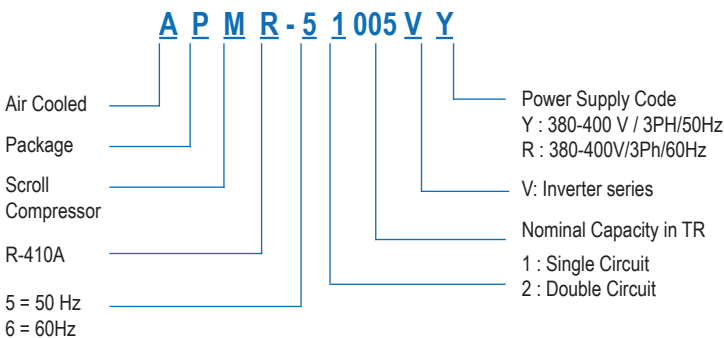
Legend .....	2	Fan Performance .....	15-16
Nomenclature .....	2	Typical Wiring Diagram .....	17-18
Introduction .....	2	Electrical Data .....	19
General Features .....	3	Dimensional Data .....	20
Main Component Features .....	3	Loading Points .....	23
Optional Features .....	6	Sound Data.....	24
General Data .....	7-10	Recommended Clearances .....	26
Capacity Ratings .....	11-14	Guide Specifications .....	27


## Legend

The following legends are used throughout this manual:

AFR .....	Air Flow Rate	L/s.....	Liters per second
BPF.....	By Pass Factor	MBh.....	BTUHx1000
CFM.....	Cubic feet per minute	Pa.....	Pascal
EER.....	Energy Efficiency Ratio	Ph.....	Phase
ESP.....	External Static Pressure	PI .....	Power Input of Compressor in kW
Hz .....	Hertz	RPM .....	Revolutions Per Minute
in. wg.....	Inch water gauge	RPS.....	Rated Power Supply
kW.....	Kilowatts	TR.....	Tons of Refrigeration
kg.....	Kilogram	V.....	Volts
lbs.....	Pounds weight		

## Nomenclature



 **SKM reserves the right to change, in part or in whole the specifications of its Air Conditioning Equipment at any time in order to add the latest technology. Therefore, the enclosed information may change without any prior notice.**

## Introduction

SKM **APMR-V** Series NEW BLDC - Inverter Type Packaged Air Conditioners Series are designed and manufactured to meet the requirements of Gulf's severe climatic conditions and are built specifically for High Energy Efficiency ducted systems which will enable them to be installed easily on rooftop or on ground .

The **APMR-V** series Packaged Air Conditioners are compact, quiet, most efficient and self contained units are ideal for commercial and top end residential applications.

Available in 14 different sizes from 5 to 30 TR (20 to 105 kW) in 50/60 Hz at nominal AHRI conditions. **APMR -V** series packaged air conditioners are designed to operate in a wide ambient temperature range between 50°F (10°C) to 125°F (51.7°C). Two independent refrigeration circuits are provided where two compressors are used. For Ratings above 125 °F , please contact SKM.

**APMR-V** units are designed and rated in accordance with AHRI 210/240 and 340/360 standards.

**APMR-V** series units from SKM are completely assembled, leak tested, vacuumed, internally wired and fully charged with R-410A refrigerant at factory. Each unit is fully factory tested before dispatch and is ready for installation. All that is required on the site is to connect ducts, drain lines, main power supply and field wiring to the thermostat. This greatly reduces the installation work and cost.

SKM provides qualified service and stock of replacement parts in all major cities of the G.C.C. countries, Egypt, Jordan, and Pakistan. See back cover for details or call SKM.

**SKM Air Conditioning LLC**



**You name it....We cool it**



## General Features

The **APMR-V** Series is a modern, diversified and environment friendly series of BLDC- Inverter type packaged air conditioners which use R-410A refrigerant.

The **APMR-V** Series BLDC- Inverter Packaged Air Conditioners are yet another new unique series from SKM incorporates many salient features which, together, provides a heavy duty, robust, long lasting commercial unit meant for high end residential and commercial applications.

The **APMR-V** series models combine high efficiency condenser and cooling coils, evaporator blower and heavy duty motor in addition to premium safety and operational controls.

The complete **APMR-V** series BLDC- Inverter type packaged unit provides an extremely rugged, long life, energy efficient, self contained packaged air conditioner that will provide cooling with higher efficiency over a long and extended life.

**What makes APMR series yet another model in the top class range of SKM products is the use of:**

- High efficiency totally sealed Inverter driven scroll hermetic compressors.
- Totally enclosed, Class F insulated, condenser and evaporator fan motors.
- Heavy duty condenser and evaporator coils optimised in design for long-life maintenance free operation.
- Cabinet construction specifically designed for Gulf climates.
- Advance microprocessor for the unit operation.
- Typically, much heavier gauge tubing and thicker fins for ruggedness and long life.
- Electronic expansion Valves for Precise Temperature control.

## Main Component Features

The common standard features of all **APMR-V** series packaged units include the following

### Compressors

Compressors used in **APMR-V** packaged unit series are BLDC type Inverter Driven, hermetically sealed, compact scroll with the following features:

- High Energy Efficiency.
- Variable speed
- Quiet operation, Low Sound levels.
- Compact and light.
- Limited wear.
- Unique ability to handle liquid refrigerant.
- Suction gas cooled compressor.
- Brazed fittings or Rotalock options.
- Two refrigerant circuits on larger units provides efficient part load.
- No internal valves.

### Condenser Coils

Condenser coils are manufactured of seamless copper tubes mechanically bonded to aluminum fins to ensure optimum heat transfer. All coils are tested against leakage by air pressure of 715psig (4930kPa) under water. All standard coils are 2,3 or 4 rows With 14FPI (1.8mm) or 16FPI (1.6mm). An integral sub cooling circuit is provided to increase the cooling capacity, without additional operating cost.



Condenser-Coil

For different application requirements, other optional condenser fin materials are available:

- Copper fins.
- Electrotinned Copper Fins.
- Copper finned coils with electro-tinned after manufacturing.
- Precoated Aluminum fins  
The pre-coated is hydrophobic polyurethane resin. This option provides substantial corrosion protection beyond standard coil construction.
- Aeris Guard Coil Coating  
The Aeris Guard Coil is a self etching high performance modified epoxy finish that is specifically designed to coat and protect Aluminum and Copper surfaces. In addition, the coating is ideal for the protection of ferrous and non ferrous materials.

All models are suitable for Gulf countries, ensuring the condenser coil design shall provide long life operation with the least possibility operational blockage on the condenser. Ample condenser surface and sensible air flow across the condenser ensures a low temperature differential between condensing temperature and the high Gulf ambient making the APMR packaged unit perform efficiently and durably.

### Condenser Fans

The condenser fans are Propeller type, aluminium Sheet insert sprayed with PP plastic, directly driven by EC-Technology electric motors.

Motors are Totally Enclosed Air Over (TEAO) with class 'F' insulation and with IP55 protection.

The TEAO and class 'F' Insulation features ensure long life and are unique to SKM.

The motors are factory wired using wires specially selected for high ambient operation, to unit control panel where the motor contactors are located to control the operation of these motors.

The condenser fans are individually statically and dynamically balanced at the factory. Complete fan assembly is provided with Steel, coated with black plastic (RAL 9005) Guard Grille.

### Evaporator

Evaporator coils are manufactured of seamless copper tubes mechanically bonded to aluminium fins to ensure optimum heat transfer. All evaporator coils are tested against leakage by air pressure of 450psig (3103kPa) under water. The DX evaporator coils are complete with headers of seamless copper tubing. Supply headers incorporate a correctly sized distributor. For different application requirements, other evaporator coil material and/or treatment are available on request :

- Copper fins.
- Electroplated Copper fins.
- Copper finned coils with electro-tinned after manufacturing.
- Precoated Aluminum fins.

The pre-coated is hydrophobic polyurethane resin. This option provides substantial corrosion protection beyond standard coil construction.

- Aeris Guard Coil Coating.

The Aeris Guard Coil is a self etching high performance modified epoxy finish that is specifically designed to coat and protect Aluminum and Copper surfaces. In addition, the coating is ideal for the protection of ferrous and non ferrous materials.

Evaporator coils are rated in accordance with AHRI-410. Evaporator coil supplied with suitable size ELECTRONIC expansion valve(s) and multi-circuited distributors providing capacity modulation to match the compressors. The cross wave fins and staggered tubes design uses the evaporator surface effectively by creating uniform air turbulence and optimum heat transfer over the entire finned surface. Requirements for higher face velocities can be handled by use of moisture eliminators to avoid carryover.

## FILTER SECTION

APMR-V series are supplied with 1" thick Aluminium type filters with grade G2 as standard for all models.

## Evaporator Fan & Drive

Standard evaporator fan is forward curved centrifugal DIDW, statically and dynamically balanced complete with shaft, self-aligning, lubricated for life ball bearings.

APMR-V series have single and dual fans mounted on a single heavy duty shaft.

The fan(s) are driven by a single speed electric motor, Class F insulated, IP55 protected & are totally enclosed 4 pole motor rated for continuous operation at design conditions.

The motor is fitted with an adjustable V-belt drive, as standard. Shaft ends insert into oversized, tapered lock self-aligning, long-life bearings Motor is factory wired to the control panel where the motor contactor is located.

## Casing and Structure

The unit casing used in APMR -V Inverter Packaged units is made of zinc coated galvanized.

steel sheets conforming to JIS-G 3302 and ASTM A653 which is phosphatized before application of an electrostatic powder coat of approximately 60 microns and then oven-baked for tough and lasting weather resistant finish. This finish and coating can pass a 1000 hour in 5 % salt spray testing at 95°F (35°C) and 95% relative humidity as per ASTM B117. The entire casing panels are designed to be leak proof against rain and ensure rain water cannot enter the packaged air conditioner interior.

The evaporator section is sealed with vinyl gaskets.

The standard evaporator section is insulated from all sides with black-neoprene faced heavy density 1" thick fibreglass insulation.

The insulation-cum-sound liner meets the fire requirements of NFPA90A & 90B and is secured with mechanical fasteners in addition to water resistant adhesive.

For applications requiring an inner skin in the evaporator section, option DSE provides an 0.7mm galvanized inner skin. Suitable isolation to ensure no cold-bridges and no condensation on the exterior of the units is provided. The condensate drain pan is heavily insulated to ensure condensation does not occur. Stainless steel condensate drain pans are available on request.

## Refrigerant R- 410A Why 410A?

R-410A has a higher volumetric cooling capacity compared to R-22 and has better thermal exchange properties. This results in overall performance gains in terms of system efficiency. The greater density of the vapour in R-410A permits higher system velocities, reduces pressure drop losses and allows smaller diameter tubing to be used. In other words a smaller unit can be developed using a smaller displacement compressor, less coil and less refrigerant while maintaining system efficiencies comparable to current day R-22 equipment.

## Electronic Expansion Valve

Inverter series package use electronic expansion valve for precise control refrigerant mass flow. Our electronic expansion valve improves EER (Energy Efficiency Ratio) at full & part-load conditions. Also it improves temperature control & increases the range of operating conditions.



## Control Panel

The unit mounted control panel enclosure is fabricated out of heavy gauge sheet steel in phosphatized powder coated baked finish. The enclosure conforms to IP54 as per guidelines in IEC 529.

- A compatible VFD drives compressors.
- Individual condenser fan motor contactors.
- Thermal magnetic circuit breakers for compressors and condenser fan motors.
- Voltage monitoring module for protection against under voltage, over voltage, phase loss, phase reversal and phase unbalance of the incoming voltage.
- Circuit breaker for control circuit.
- Microprocessor master board with graphical display.
- Electronic expansion valve control integrated in the controller.
- Control Relay.
- Control circuit on/off switch.
- Control terminal blocks and power terminal blocks.

## Microprocessor control:

Microprocessor control system is available for Inverter series package as a standard feature. Our high-energy efficient package has a full function microprocessor control unit designed to keep the package running at its most energy efficient level. It is a rugged microprocessor-based controller that is designed for the hostile environment of HVAC industry. It provides flexibility with set points and control options that can be selected prior to commissioning a system or when the unit is live and functioning.





Displays, alarms and other interfaces are accomplished in a clear and simple language that informs the user as to the status of the system. It is designed to safeguard the system that is being controlled, eliminate the need for manual intervention and to provide a simple but meaningful man-machine-interface.

This controller provides complete operational control for the package and has built-in auto diagnostic capability that can signal normal operation or alarm conditions as well as shutting down the package or system, if necessary.



Room Unit

The controller comes with a loose supplied sleek and elegant design room unit for installing in the conditioned space. For the serial connection use three-wire shielded cable, AWG 20-22. The length of the network must not exceed 500 m. For extended networks fit a 120 Ohm resistor between RX/TX+ and RX/TX- on the first and last device, to avoid possible communication problems.

The room unit has a built in sensor for measuring the room temperature. It transmits room temperature, set point, unit-operating mode, operating schedule etc. to the unit controller.

The room unit has a built in sensor for measuring the room temperature. It transmits room temperature, set point, unit-operating mode, operating schedule etc. to the unit controller. Control of the compressors is based on room temperature and the set point, as standard. If unit control needs to be based on duct temperature, please specify during time of order.

#### The Main Features of the controller are as follows:

- A graphical LCD Display with back-lit that can be seen in bright or dim lighting.
- A six button generic keypad that is so user friendly, it rarely requires a reference manual.
- Multiple authorization levels to provide tight security of the control system.
- Usability and display The menu-based system allows the application to be configured as a tool for instant diagnostics. All this is possible by the immediately accessible overview screens and the commissioning tool.
- Quick menus information on the status, accessible directly from the main menu, without needing to access the submenus. Configuration, active function and operating temperature information are arranged in loops of screens, scrolled by pressing the DOWN button from the main screen.
- BMS 485/Modbus cpCO controller has a built in BMS port that allows direct interfacing with compressor driver an RS485 network with maximum baud rate of 19200.
- Capacity control based on temperature set point and the return air temperature. A special control zone based on return air temperature that reduces compressor cycling, and improved unit part load efficiency.

#### Display Information

SKM package offer a graphics LCD display which allows the operator to access different parameters of the package. Operator can view and change the set point of package parameters.

The graphical display has lot of features, trending is one of the key features of graphical display. The well designed keypad with three function keys, tw

o direction keys and one selection key allows the operator to navigate through different Menu, such as:

- Status.
- Outputs.
- Inputs.
- Setpoint
- Alarm

#### System Control Philosophy

The unit may be enabled or disabled manually or through the use of an external signal from a building automation system (BMVF option).

Control is based upon set point and return air temperature. How fast the temperature changes is calculated and capacity decisions are based upon the rate, the current temperature, and the control temperature zone.

Capacity is never added if the system is moving toward the temperature target at an acceptable rate. The unit will monitor all control functions and stage the compressor to maintain the required operating capacity.

#### Easy Accessible Measurements Include:

- Status of the unit.
- Status of each circuit/compressor.
- Status of condenser fans.
- Suction pressure and temperature for each refrigerant circuit.
- Discharge pressure and temperature for each refrigerant circuit.
- Expansion valve opening percentage.
- All active set points.
- Run time for each compressor.
- Number of compressor starts.
- Lockout and alarm status.
- Log of last 100 alarms.
- Date and time.

#### System Protection

The following system protection controls will automatically act to insure system reliability and protection of the unit.

- Low suction pressure protection.
- High discharge pressure protection.
- High discharge temperature protection.
- Low discharge pressure protection.
- Low superheat protection.
- Compressor external thermal protection.
- Freeze protection.
- Under voltage, over voltage, phase loss, phase reversal and phase unbalance protection.
- Sensor error protection.
- Anti-recycle.
- 3-Levels of passwords to restrict the intentional mishandling.

## Optional Features

### Double Skin Evaporator (DSE)

Double skin evaporator section with galvanized inner skin.

### Double Skin Insulation (DSI)

Inner skin in the evaporator section is provided with foam board insulation.

### Flat Filter. (FSIP2)

Filter Section with Two-Inch Thick Washable Aluminum Flat Filter Media (EN Class: G3).

### Alternative Condenser Material

Made of copper tubes and alternative fin material and/or protective coating.

- For Aluminum Fins with Aeris Post Coat Protection, specify (FAA).
- For Pre Coated aluminum fins, specify (FAP).
- For Copper Fins, specify (FC).
- For Copper Fins with Aeris Post Coat Protection,specify (FCA).

### Alternative Evaporator Material

Made of copper tubes and alternative fin material and/or protective coating.

- For Aluminum Fins with Aeris post Coat Protection, specify (EFAA).
- For Pre-Coated aluminum fins, specify (EFAP).
- For Copper Fins, specify (EFC).
- For Copper Fins with Aeris Post Coat Protection, specify (EFCA)

### Rotalock Valves on compressors (RVC)

For additional facilitation of maintenance of unit.

### Pressure Relief Valve (PRV)

To protect the unit from being over-pressurized.

### Pressure Gauges (SDG1)

Suction and discharge indication of each refrigerant circuit. Gauges mounted outside the Control Panel.

### Condenser Coil Guard (CGP)

Wire mesh guard, in painted finish for condensers coils.Recommended on ground level installation where coil needs to be protected against vandalism.

### Stainless steel drain pan (Grade 304) (SDP)

Stainless steel drain pan(Grade 304). Insulation under drain pan as per SKM standard.

### Stainless Steel Drain Pan (SSP)

Heavy gauge 316 stainless steel drain pan under the entire cooling coil and moisture eliminator. Insulation under drain pan as per SKM standard.

### Up Size Evaporator Motor (USM)

Unit with one up size evaporator motor.

### IP 55 Control Panel (ICP)

Control Panel for special applications to meet IP55 requirements.

### Main Isolator (without door interlock) (ISO)

For main power isolation. (consult SKM)

### BMS interface volt free contacts (BMVF)

Volt free contacts for run status, common fault status, auto mode status and provision for remote on/off shall be provided as option if required. For additional requirements, please contact SKM.

### Voltage Monitoring Module as per DEWA (DVM)

Under voltage relay as per DEWA regulations.This option is available for Dubai, UAE only.

### Note:

- Whenever multiple option related to unit control, please consult SKM for the drawings as the size of the control panel might change.



## GENERAL DATA - 50 Hz

Model		APMR-V	51005G	51006G	51008G	51009G	51010G	51011G	51012G
Cooling Capacity (1)	MBH		67.7	72.4	99.3	108.7	122.2	135.1	143.8
	kW		19.8	21.2	29.1	31.9	35.8	39.6	42.1
Cooling Capacity (2)	MBH		58.1	62.2	86.0	94.1	104.8	116.8	124.1
	kW		17.0	18.2	25.2	27.6	30.7	34.2	36.4
Compressor	Type	-	INVERTER DRIVEN HERMETIC SCROLL						
	Quantity	-	1	1	1	1	1	1	1
	Oil Charge	US Gal		0.61	0.61	0.61	0.61	0.61	0.61
Liter			2.30	2.30	2.30	2.30	2.30	2.30	2.30
Condenser Coil	Type	-	Hi-X 3/8" Tubes						
	Face Area	ft <sup>2</sup>	27.3	27.3	30.7	30.7	30.7	54.7	54.7
		m <sup>2</sup>		2.5	2.5	2.9	2.9	2.9	5.1
Condenser Fan	Type	-	Propeller Direct Drive						
	Code / Quantity	-	630 /1	630/1	630/2	630/2	630/2	630/2	630/2
Condenser Motor	Type	-	Electronically Commutated, Totally Enclosed Air Over, Class-F insulation, IP-55 Protected						
	Max power input / Quantity	kW	0.4/1	0.4/1	0.4/2	0.4/2	0.4/2	0.4/2	0.4/2
Evaporator Coil	Type	-	Hi-X 3/8" Tubes						
	Face Area	ft <sup>2</sup>	6.4	6.4	9.7	9.7	9.7	12.5	12.5
		m <sup>2</sup>		0.6	0.6	0.9	0.9	0.9	1.2
Evaporator Fan	Type	-	Centrifugal DIDW Belt Drive						
	Code / Quantity	-	10/10 R	10/10 R	12/12 R	12/12 R	12/12 R	15/15 RK	15/15 RK
	Air Flow Rate	cfm		2000	2400	3000	3200	3400	4000
l/s			940	1128	1410	1504	1598	1880	2021
Evaporator Motor	Type	-	Totally Enclosed Fan Cooled, Class-F insulation, 4-pole, IP55 Protected.						
	Size	kW	0.75	1.10	1.10	1.50	1.50	1.50	2.2
Refrigerant (R - 410A) Operating Charge	lbs		18.6	18.6	30.3	30.3	30.3	37.2	37.2
	kg		8.4	8.4	13.8	13.8	13.8	16.9	16.9
Number of Refrigerant Circuits		-	1	1	1	1	1	1	1
Unit Operating Weight	lbs		950	950	1213	1232	1232	1715	1715
	kg		431	431	551	559	559	778	778

Table 2

### Notes:

- (1) Capacity ratings are based on AHRI Standard 210/240 & 340/360. Evaporator entering air conditions of 80°/67°F (27°/19.5°C) dry bulb/wet bulb and condenser entering air temperature of 95°F (35°C) dry bulb.
- (2) Evaporator entering air conditions of 80°/67°F (27°/19.5°C) dry bulb/wet bulb and condenser entering air temperature of 118.4°F (48°C) dry bulb.
- (3) Capacity is gross capacity which does not include the effect of evaporator fan motor heat.

## GENERAL DATA - 50 Hz

Model	APMR-V	52014G	52016G	52018G	52020G	52025G	52027G	52030G	
Cooling Capacity (1)	MBH	158.1	191.7	215.1	242.1	292.6	324.4	357.2	
	kW	46.3	56.2	63.0	71.0	85.8	95.1	104.7	
Cooling Capacity (2)	MBH	137.2	165.0	185.6	207.8	253.7	280.2	308.0	
	kW	40.2	48.4	54.4	60.9	74.4	82.1	90.3	
Compressor	Type	-	INVERTER DRIVEN HERMETIC SCROLL						
	Quantity	-	2	2	2	2	2	2	2
	Oil Charge	US Gal	0.61/0.61	0.61/0.61	0.61/0.61	0.61/0.61	0.61/0.61	0.61/0.61	0.61/0.61
Liter		2.3/2.3	2.3/2.3	2.3/2.3	2.3/2.3	2.3/2.3	2.3/2.3	2.3/2.3	
Condenser Coil	Type	-	Hi-X 3/8" Tubes						
	Face Area	ft <sup>2</sup>	54.7	54.7	54.7	54.7	60.0	60.0	65.0
		m <sup>2</sup>	5.1	5.1	5.1	5.1	5.6	5.6	6.0
Condenser Fan	Type	-	Propeller Direct Drive						
	Code / Quantity	-	710/2	710/2	710/2	710/2	710/3	710/3	710/3
Condenser Motor	Type	-	Electronically Commutated, Totally Enclosed Air Over, Class-F insulation, IP-55 Protected						
	Max power input / Quantity	kW	0.82/2	0.82/2	0.82/2	0.82/2	0.82/3	0.82/3	0.82/3
Evaporator Coil	Type	-	Hi-X 3/8" Tubes						
	Face Area	ft <sup>2</sup>	16.0	16.0	21.7	21.7	26.0	26.0	30.3
		m <sup>2</sup>	1.5	1.5	2.0	2.0	2.4	2.4	2.8
Evaporator Fan	Type	-	Centrifugal DIDW Belt Drive						
	Code / Qty.	-	12/12 R2	12/12 R2	15/15 R2	15/15 R2	15/15 R2	15/15 R2	18/18 R2
	Air Flow Rate	cfm	5000	5800	7000	8000	8500	9500	11500
l/s		2350	2726	3290	3760	3995	4465	5405	
Evaporator Motor	Type	-	Totally enclosed fan cooled, Class-F insulation, 4-pole, IP55 Protected.						
	Size	kW	2.2	2.2	3.0	3.0	3.0	4.0	5.5
Refrigerant (R - 410A) Operating Charge	lbs	20.5/20.5	20.5/20.5	28.9/29.1	28.9/29.1	35.4/36.1	35.4/36.1	37.5/37.7	
	kg	9.3/9.3	9.3/9.3	13.1/13.2	13.1/13.2	16.1/16.3	16.1/16.3	17/17.1	
Number of Refrigerant Circuits	-	2	2	2	2	2	2	2	
Unit Operating Weight	lbs	1969	1974	2499	2499	3059	3060	3185	
	kg	893	896	1134	1134	1388	1389	1445	

Table 3

### Notes:

- (1) Capacity ratings are based on AHRI Standard 210/240 & 340/360. Evaporator entering air conditions of 80°/67°F (27°/19.5°C) dry bulb/wet bulb and condenser entering air temperature of 95°F (35°C) dry bulb.
- (2) Evaporator entering air conditions of 80°/67°F (27°/19.5°C) dry bulb/wet bulb and condenser entering air temperature of 118.4°F (48°C) dry bulb.
- (3) Capacity is gross capacity which does not include the effect of evaporator fan motor heat.





## GENERAL DATA - 60 Hz

Model		APMR-V	61005G	61006G	61008G	61009G	61010G	61011G	61012G
Cooling Capacity (1)	MBH		68.0	72.7	99.6	109.1	122.7	135.7	144.5
	kW		19.9	21.3	29.2	32.0	36.0	39.8	42.4
Cooling Capacity (2)	MBH		59.8	64.1	88.5	96.8	108.0	120.0	127.6
	kW		17.5	18.8	25.9	28.4	31.7	35.2	37.4
Compressor	Type	-	INVERTER DRIVEN HERMETIC SCROLL						
	Quantity	-	1	1	1	1	1	1	1
	Oil Charge	US Gal		0.61	0.61	0.61	0.61	0.61	0.61
Liter			2.30	2.30	2.30	2.30	2.30	2.30	2.30
Condenser Coil	Type	-	Hi-X 3/8" Tubes						
	Face Area	ft <sup>2</sup>	27.3	27.3	30.7	30.7	30.7	54.7	54.7
		m <sup>2</sup>	2.5	2.5	2.9	2.9	2.9	5.1	5.1
Condenser Fan	Type	-	Propeller Direct Drive						
	Code / Quantity	-	630 /1	630/1	630/2	630/2	630/2	630/2	630/2
Condenser Motor	Type	-	Electronically Commutated, Totally Enclosed Air Over, Class-F insulation, IP-55 Protected						
	Max power input / Quantity	kW	0.53/1	0.53/1	0.53/2	0.53/2	0.53/2	0.53/2	0.53/2
Evaporator Coil	Type	-	Hi-X 3/8" Tubes						
	Face Area	ft <sup>2</sup>	6.4	6.4	9.7	9.7	9.7	12.5	12.5
		m <sup>2</sup>	0.6	0.6	0.9	0.9	0.9	1.2	1.2
Evaporator Fan	Type	-	Centrifugal DIDW Belt Drive						
	Code / Quantity	-	10/10 R	10/10 R	12/12 R	12/12 R	12/12 R	15/15 RK	15/15 RK
	Air Flow Rate	cfm		2000	2400	3000	3200	3400	4000
l/s			940	1128	1410	1504	1598	1880	2021
Evaporator Motor	Type	-	Totally Enclosed Fan Cooled, Class-F insulation, 4-pole, IP55 Protected.						
	Size	kW	0.75	1.10	1.10	1.50	1.50	1.50	2.2
Refrigerant (R - 410A) Operating Charge	lbs		18.6	18.6	30.3	30.3	30.3	37.2	37.2
	kg		8.4	8.4	13.8	13.8	13.8	16.9	16.9
Number of Refrigerant Circuits		-	1	1	1	1	1	1	1
Unit Operating Weight	lbs		950	950	1213	1232	1232	1715	1715
	kg		431	431	551	559	559	778	778

Table 4

### Notes:

- (1) Capacity ratings are based on AHRI Standard 210/240 & 340/360. Evaporator entering air conditions of 80°/67°F (27°/19.5°C) dry bulb/wet bulb and condenser entering air temperature of 95°F (35°C) dry bulb.
- (2) Capacity ratings based on evaporator entering air temperatures of 80/67 °F (26.7/19.4 °C) dry bulb/wet bulb and condenser entering air temperature of 115 °F (46.1 °C).
- (3) Capacity is gross capacity which does not include the effect of evaporator fan motor heat.

## GENERAL DATA - 60 Hz

Model	APMR-V	62014G	62016G	62018G	62020G	62025G	62027G	62030G	
Cooling Capacity (1)	MBH	158.9	193.1	216.8	244.6	294.9	327.3	360.9	
	kW	46.6	56.6	63.5	71.7	86.4	95.9	105.8	
Cooling Capacity (2)	MBH	141.5	170.5	191.9	215.3	261.6	289.4	318.5	
	kW	41.5	50.0	56.2	63.1	76.7	84.8	93.3	
Compressor	Type	-	INVERTER DRIVEN HERMETIC SCROLL						
	Quantity	-	2	2	2	2	2	2	2
	Oil Charge	US Gal	0.61/0.61	0.61/0.61	0.61/0.61	0.61/0.61	0.61/0.61	0.61/0.61	0.61/0.61
Liter		2.3/2.3	2.3/2.3	2.3/2.3	2.3/2.3	2.3/2.3	2.3/2.3	2.3/2.3	
Condenser Coil	Type	-	Hi-X 3/8" Tubes						
	Face Area	ft <sup>2</sup>	54.7	54.7	54.7	54.7	60.0	60.0	65.0
		m <sup>2</sup>	5.1	5.1	5.1	5.1	5.6	5.6	6.0
Condenser Fan	Type	-	Propeller Direct Drive						
	Code / Quantity	-	710/2	710/2	710/2	710/2	710/3	710/3	710/3
Condenser Motor	Type	-	Electronically Commutated, Totally Enclosed Air Over, Class-F insulation, IP-55 Protected						
	Max power input / Quantity	kW	1.21/2	1.21/2	1.21/2	1.21/2	1.21/3	1.21/3	1.21/3
Evaporator Coil	Type	-	Hi-X 3/8" Tubes						
	Face Area	ft <sup>2</sup>	16.0	16.0	21.7	21.7	26.0	26.0	30.3
		m <sup>2</sup>	1.5	1.5	2.0	2.0	2.4	2.4	2.8
Evaporator Fan	Type	-	Centrifugal DIDW Belt Drive						
	Code / Qty.	-	12/12 R2	12/12 R2	15/15 R2	15/15 R2	15/15 R2	15/15 R2	18/18 R2
	Air Flow Rate	cfm	5000	5800	7000	8000	8500	9500	11500
l/s		2350	2726	3290	3760	3995	4465	5405	
Evaporator Motor	Type	-	Totally enclosed fan cooled, Class-F insulation, 4-pole, IP55 Protected.						
	Size	kW	2.2	2.2	3.0	3.0	3.0	4.0	5.5
Refrigerant (R - 410A) Operating Charge	lbs	20.5/20.5	20.5/20.5	28.9/29.1	28.9/29.1	35.4/36.1	35.4/36.1	37.5/37.7	
	kg	9.3/9.3	9.3/9.3	13.1/13.2	13.1/13.2	16.1/16.3	16.1/16.3	17/17.1	
Number of Refrigerant Circuits	-	2	2	2	2	2	2	2	
Unit Operating Weight	lbs	1969	1974	2499	2499	3059	3060	3185	
	kg	893	896	1134	1134	1388	1389	1445	

Table 5

### Notes:

- (1) Capacity ratings are based on AHRI Standard 210/240 & 340/360. Evaporator entering air conditions of 80°/67°F (27°/19.5°C) dry bulb/wet bulb and condenser entering air temperature of 95°F (35°C) dry bulb.
- (2) Capacity ratings based on evaporator entering air temperatures of 80/67 °F (26.7/19.4 °C) dry bulb/wet bulb and condenser entering air temperature of 115 °F (46.1 °C).
- (3) Capacity is gross capacity which does not include the effect of evaporator fan motor heat.



## GROSS CAPACITY RATINGS - 50 Hz

Model APMRV	AFR		EWB		Condenser Entering Air Temperature																			
	cfm	ils	°F	°C	95°F (35°C)			115°F (46.1°C)			118.4°F (48°C)			125°F (51.7°C)										
					Total Capacity	Sensible Capacity	PI*	Total Capacity	Sensible Capacity	PI*	Total Capacity	Sensible Capacity	PI*	Total Capacity	Sensible Capacity	PI*								
	(BPF)				MBh	kW	MBh	kW	kW	MBh	kW	MBh	kW	kW	MBh	kW	MBh	kW	MBh	kW	MBh	kW		
52018	6400	62	16.7		191.1	56	187.1	54.8	13.1	170.7	50	167	48.9	17.3	159.9	46.9	159.9	46.9	159.9	46.9	159.9	46.9		
	3020	67	19.4		213.3	62.5	155.4	45.5	13.5	188.1	55.1	145.9	42.8	17	183.7	53.8	144.3	42.3	17.6	175.5	51.4	141.3	41.4	18.8
	0.09	72	22.2																					
	7000	62	16.7		193.8	56.8	193.8	56.8	13.2	173.1	50.7	173.1	50.7	16.8	169.3	49.6	169.3	49.6	17.4	162.2	47.5	162.2	47.5	18.6
	3304	67	19.4		215.1	63	162.2	47.6	13.5	190	55.7	153	44.8	17.1	185.6	54.4	151.4	44.4	17.7	177.4	52	148.4	43.5	18.9
	0.1	72	22.2																					
52020	9750	62	16.7		203.4	59.6	203.4	59.6	13.3	180.7	53	180.7	53	16.9	176.7	51.8	176.7	51.8	17.5	174.4	51.1	174.4	51.1	18.8
	4601	67	19.4		222.4	65.2	193.2	56.6	13.7															
	0.13	72	22.2																					
	8000	62	16.7		217.6	63.8	217.6	63.8	16	193.5	56.7	193.5	56.7	20.3	189.3	55.5	189.3	55.5	21.1	181.2	53.1	181.2	53.1	22.5
	3776	67	19.4		242.1	71	182.5	53.5	16.5	212.8	62.4	171.7	50.3	20.8	207.8	60.9	169.9	49.8	21.5	198.6	58.2	166.6	48.8	22.9
	0.11	72	22.2																					
52025	9750	62	16.7		223.8	65.6	223.8	65.6	16.1	199	58.3	199	58.3	20.5	194.6	57	194.6	57	21.2	186.3	54.6	186.3	54.6	22.6
	4601	67	19.4		246.4	72.2	201.7	59.1	16.6	217.2	63.7	191.4	56.1	20.8	212.2	62.2	189.6	55.6	21.6	202.9	59.5	186.4	54.6	23
	0.13	72	22.2																					
	7600	62	16.7		258.3	75.7	241.2	70.7	18.1	230.9	67.7	229.5	67.3	23.3	226	66.3	226	66.3	24.2	216.8	63.5	216.8	63.5	26
	3587	67	19.4		289.7	84.9	202.6	59.4	18.5	255.9	75	189.6	55.6	23.8	250.2	73.3	187.5	54.9	24.7	239.5	70.2	183.4	53.8	26.5
	0.06	72	22.2		311.5	91.3	159	46.6	18.7															
52027	8500	62	16.7		263.1	77.1	257.6	75.5	18.2	235.4	69	235.4	69	23.4	230.5	67.6	230.5	67.6	24.3	221.1	64.8	221.1	64.8	26.1
	4012	67	19.4		292.6	85.8	213.6	62.6	18.5	259.4	76	201.1	58.9	23.8	253.7	74.4	199	58.3	24.8	243	71.2	195	57.1	26.5
	0.06	72	22.2																					
	11719	62	16.7		277.1	81.2	277.1	81.2	18.4	248	72.7	248	72.7	23.6	241.8	70.9	241.8	70.9	24.5	231.9	68	231.9	68	26.3
	5531	67	19.4		303.1	88.8	253.2	74.2	18.6	270	79.1	241.5	70.8	24										
	0.09	72	22.2																					
52030	8854	62	16.7		287.7	84.3	273.6	80.2	21.4	256.6	75.2	256.6	75.2	27.4	251.2	73.6	251.2	73.6	28.4	240.9	70.6	240.9	70.6	30.4
	4179	67	19.4		322.5	94.5	229	67.1	21.9	284.2	83.3	214.4	62.8	28	277.9	81.4	212	62.1	29	266	78	207.5	60.8	31
	0.06	72	22.2		346.6	101.6	178.8	52.4	22.2															
	9500	62	16.7		291	85.3	285.2	83.6	21.4	259.6	76.1	259.6	76.1	27.4	254.2	74.5	254.2	74.5	28.5	243.8	71.5	243.8	71.5	30.5
	4484	67	19.4		324.4	95.1	236.7	69.4	21.9	286.5	84	222.4	65.2	28	280.2	82.1	220.1	64.5	29.1	268.4	78.7	215.7	63.2	31.1
	0.07	72	22.2																					
52030	11719	62	16.7		300.8	88.2	300.8	88.2	21.6	268.6	78.7	268.6	78.7	27.6	263	77.1	263	77.1	28.7	252.3	74	252.3	74	30.7
	5531	67	19.4		331.1	97	263.4	77.2	22	293.9	86.1	249.9	73.2	28.2	287.6	84.3	247.7	72.6	29.3	275.7	80.8	243.5	71.4	31.3
	0.09	72	22.2																					
	10313	62	16.7		315.1	92.4	301.8	88.5	24.6	280.5	82.2	280.5	82.2	31.5	274.5	80.5	274.5	80.5	32.7	263.2	77.2	263.2	77.2	34.9
	4867	67	19.4		354.1	103.8	252.3	74	25.2	311.6	91.3	236.3	69.3	32.2	304.5	89.2	233.6	68.5	33.4	291.3	85.4	228.8	67.1	35.6
	0.1	72	22.2		379	111.1	196	57.5	25.6															
52030	11500	62	16.7		320	93.8	320	93.8	24.7	285.1	83.6	285.1	83.6	31.6	279.1	81.8	279.1	81.8	32.8	267.7	78.5	267.7	78.5	35
	5427	67	19.4		357.2	104.7	265.4	77.8	25.3	314.9	92.3	249.7	73.2	32.3	308	90.3	247.2	72.4	33.5	294.9	86.4	242.5	71.1	35.7
	0.11	72	22.2																					
	13650	62	16.7		327.6	96	327.6	96	24.8	292.1	85.6	292.1	85.6	31.7	286	83.8	286	83.8	32.9	274.4	80.4	274.4	80.4	35.2
6442	67	19.4		362	106.1	288.4	84.5	25.4	320.5	93.9	273.7	80.2	32.4	313.6	91.9	271.2	79.5	33.6	300.5	88.1	266.7	78.2	35.9	
0.13	72	22.2																						

Table 7

### Notes:

- (1). Ratings are based on 80°F (26.7°C) entering air dry bulb temperature.
  - (2). Capacity is gross capacity which does not include the effect of evaporator fan motor heat.
  - (3). Direct interpolation is permissible. Do not extrapolate.
- \* Power input mentioned in this page is for compressor only, and should not be used for cable or fuse selection. MCA and MFA values given in the electrical data page (19) should be referred for the same.











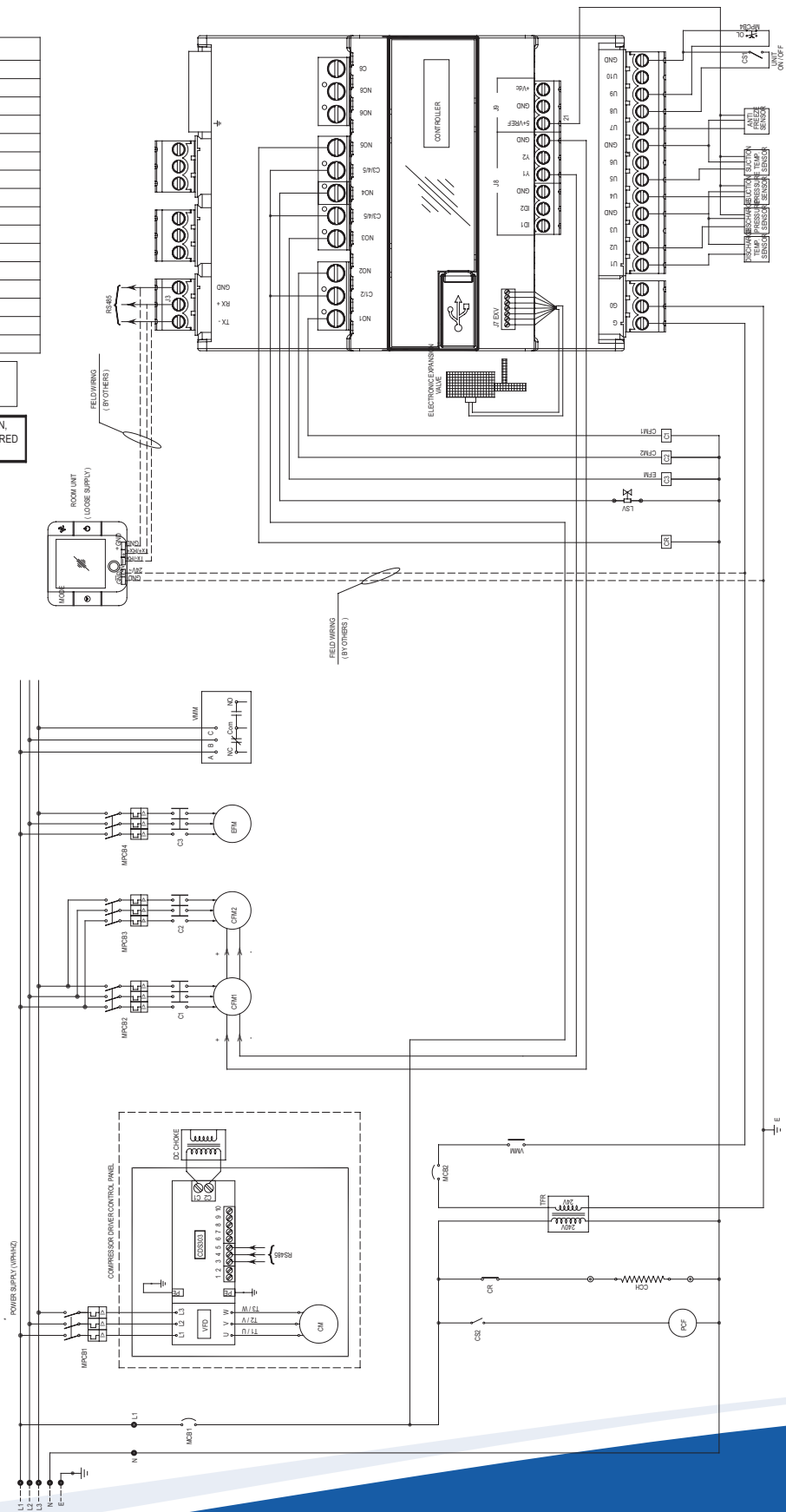


# Typical Wiring Diagram

APMR-V Models: 51005 to 51012

LEGEND	
---	FIELD WIRING & FIELD SUPPLIED DEVICES
VFD	VARIABLE FREQUENCY DRIVE
OL	OVERLOAD PROTECTOR
EFM	EVAPORATOR FAN MOTOR
C	CONTACTOR
MPCB	MOTOR PROTECTION CIRCUIT BREAKER
CM	COMPRESSOR MOTOR
CFM	CONDENSER FAN MOTOR
MCB	MINIATURE CIRCUIT BREAKER
TFR	TRANSFORMER
LSV	LIQUID LINE SOLENOID VALVE
CS	CONTROL SWITCH
CCH	CRANK CASE HEATER
VMM	VOLTAGE MONITORING MODULE
CR	CONTROL RELAY
PCF	PANEL COOLING FAN

- TYPICAL WIRING DIAGRAM SHOWN IS SUITABLE FOR 380-400V/3PH/50-60Hz ONLY.
- PROVIDE OVERCURRENT, EARTH FAULT PROTECTION, SHORT CIRCUIT AND DISCONNECT MEANS AS REQUIRED BY LOCAL & NATIONAL ELECTRIC CODE



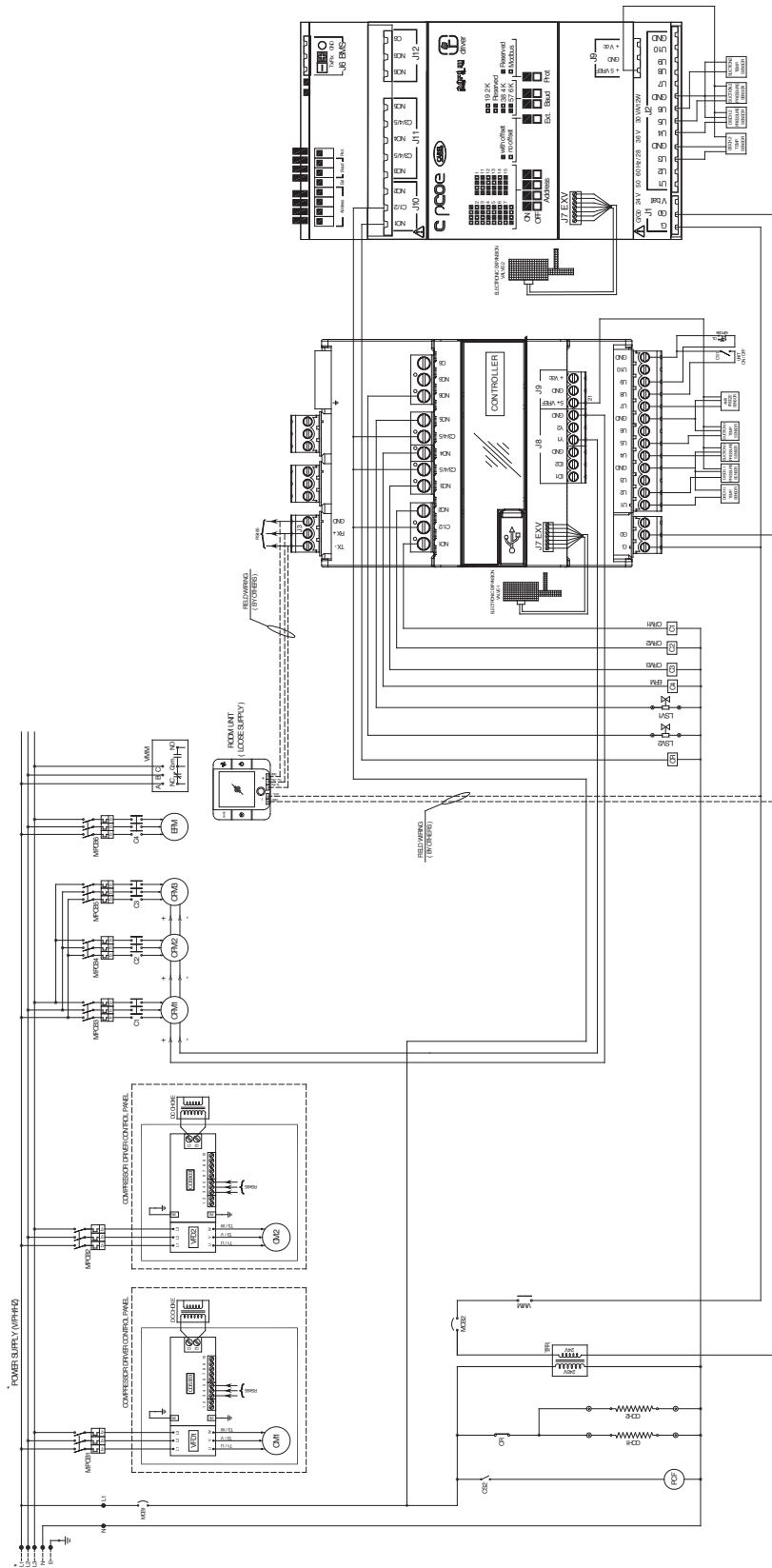
## Typical Wiring Diagram

APMR-V Models: 52014 to 52030

LEGEND	
---	FIELD WIRING & FIELD SUPPLIED DEVICES
VFD	VARIABLE FREQUENCY DRIVE
OL	OVERLOAD PROTECTOR
EFM	EVAPORATOR FAN MOTOR
C	CONTACTOR
MPCB	MOTOR PROTECTION CIRCUIT BREAKER
CM	COMPRESSOR MOTOR
CFM	CONDENSER FAN MOTOR
MCB	MINIATURE CIRCUIT BREAKER
TFR	TRANSFORMER
LSV	LIQUID LINE SOLENOID VALVE
CS	CONTROL SWITCH
CCH	CRANK CASE HEATER
VMM	VOLTAGE MONITORING MODULE
CR	CONTROL RELAY
PCF	PANEL COOLING FAN

\* TYPICAL WIRING DIAGRAM SHOWN IS SUITABLE FOR 380-400V/3PH/50-60Hz ONLY.

\*\* PROVIDE OVERCURRENT, EARTH FAULT PROTECTION, SHORT CIRCUIT AND DISCONNECT MEANS AS REQUIRED BY LOCAL & NATIONAL ELECTRIC CODE





## ELECTRICAL DATA

380-400V/3Ph/50Hz

APMR-V MODEL	UNIT CHARACTERISTIC		COMPRESSOR		CONDENSER FAN MOTOR		EVAPORATOR FAN MOTOR		
	MFA	MCA	QTY	RLA	QTY	FLA	QTY	FLA	LRA
51005	50	26	1	18.5	1	1.1	1	1.88	7.896
51006	50	27	1	18.5	1	1.1	1	2.6	11.96
51008	50	28	1	18.5	2	1.1	1	2.6	11.96
51009	50	29	1	18.5	2	1.1	1	3.45	18.285
51010	50	29	1	18.5	2	1.1	1	3.45	18.285
51011	80	38	1	26	2	1.1	1	3.45	18.285
51012	80	40	1	26	2	1.1	1	4.9	24.99
52014	80	55	2	18.5	2	4.3	1	4.9	24.99
52016	80	55	2	18.5	2	4.3	1	4.9	24.99
52018	80	57	2	18.5	2	4.3	1	6.3	34.02
52020	80	57	2	18.5	2	4.3	1	6.3	34.02
52025	125	78	2	26	3	4.3	1	6.3	34.02
52027	125	80	2	26	3	4.3	1	8.2	43.46
52030	125	83	2	26	3	4.3	1	11.2	63.84

Table 12

380-400V/3Ph/60Hz

APMR-V MODEL	UNIT CHARACTERISTIC		COMPRESSOR		CONDENSER FAN MOTOR		EVAPORATOR FAN MOTOR		
	MFA	MCA	QTY	RLA	QTY	FLA	QTY	FLA	LRA
61005	50	25.825	1	18.5	1	1.1	1	1.6	10
61006	50	26.525	1	18.5	1	1.1	1	2.3	15.87
61008	50	27.625	1	18.5	2	1.1	1	2.3	15.87
61009	50	28.525	1	18.5	2	1.1	1	3.2	24.64
61010	50	28.525	1	18.5	2	1.1	1	3.2	24.6
61011	80	37.9	1	26	2	1.1	1	3.2	24.6
61012	80	39.2	1	26	2	1.1	1	4.5	36.45
62014	80	54.725	2	18.5	2	4.3	1	4.5	36.45
62016	80	54.725	2	18.5	2	4.3	1	4.5	36.45
62018	80	56.025	2	18.5	2	4.3	1	5.8	41.76
62020	80	56.025	2	18.5	2	4.3	1	5.8	41.76
62025	125	77.2	2	26	3	4.3	1	5.8	41.76
62027	125	79.2	2	26	3	4.3	1	7.8	55.38
62030	125	82.2	2	26	3	4.3	1	10.8	92.88

Table 13

### Legend

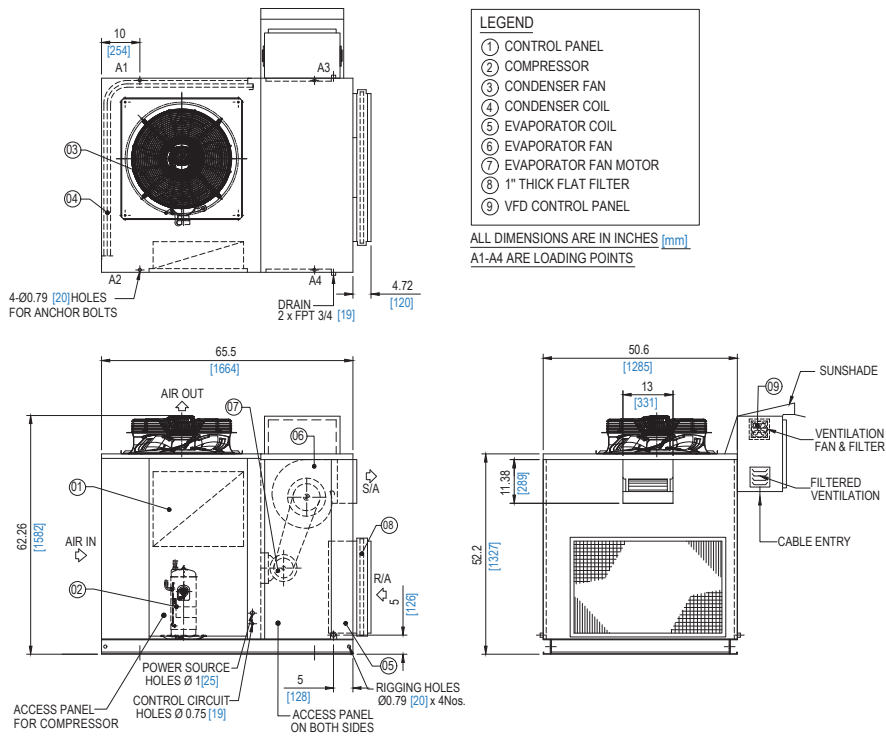
**MFA** Maximum Fuse Amps (for fuse/circuit breaker sizing), complies with NEC Article 440-22 & 430-52.  
**MCA** Minimum Circuit Amps.(for wire sizing), complies with NEC article 440-33.

**RLA** Rated Load Amps. (at worst operating condition)  
**LRA** Locked Rotor Amps  
**FLA** Full Load Amps

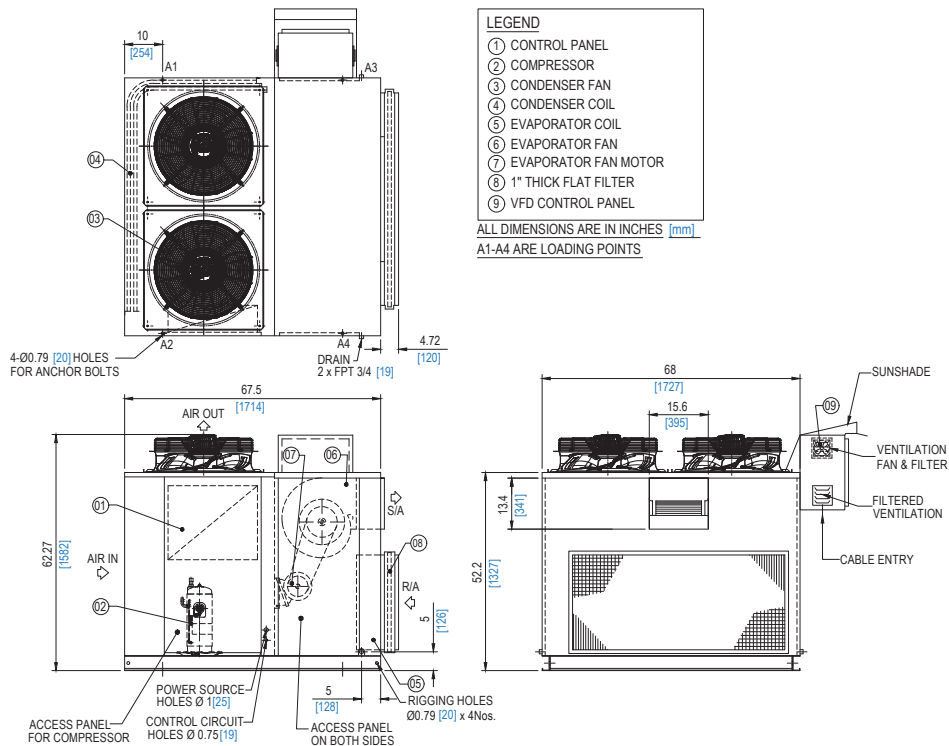
**Note :** Voltage imbalance not to exceed  $\pm 2\%$  of the rated voltage.

## Dimensional Data

### APMR-V Model - 51005, 51006 & 61005, 61006



### APMR-V Model - 51008-51010 & 61008-61010



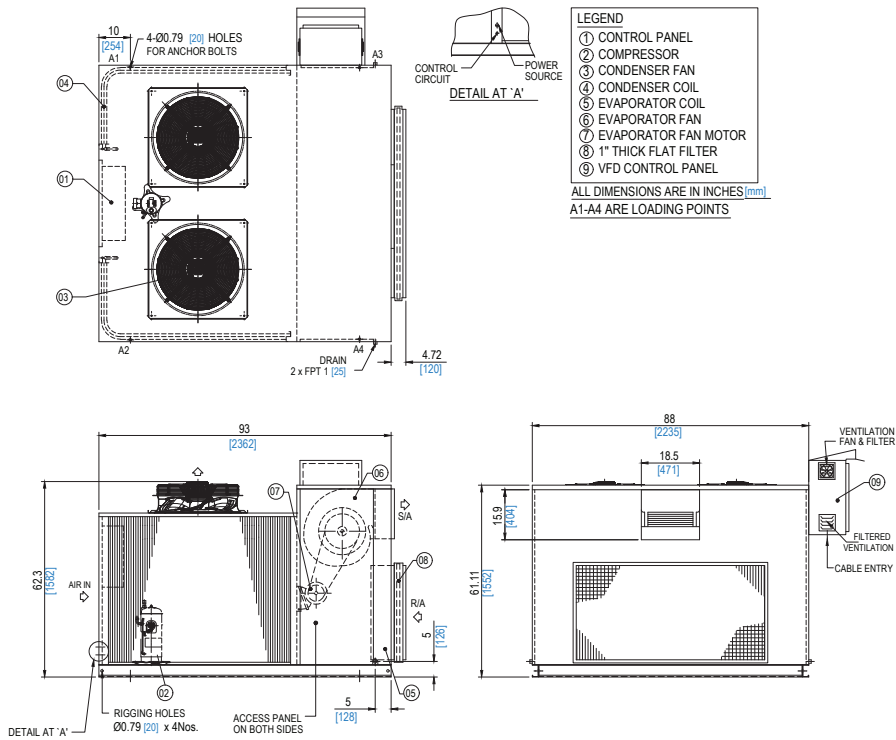
#### Note :

- Drawings are not contractually binding. 2. Before designing an installation, consult the certified drawings, available on request
- For single unit and multiple unit installation or unit is installing near to the wall, Please refer to the recommended clearance drawings (26).
- Dimensions shown in standard drawing are suitable only for open trailers. In case of closed container please consult SKM as the unit dimension will change.

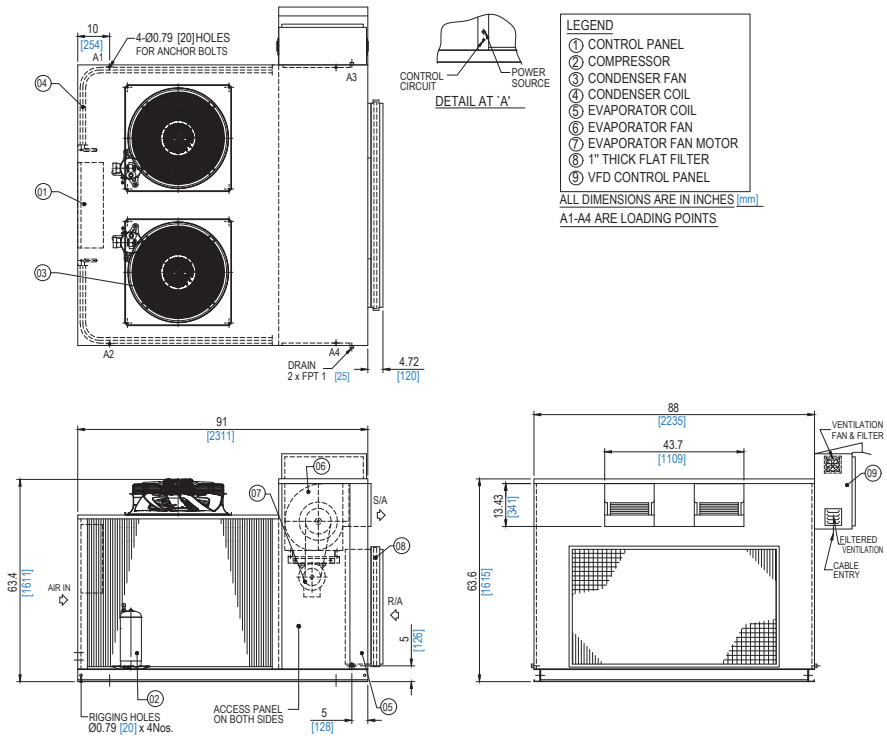


## Dimensional Data

### APMR-V Model - 51011, 51012 & 61011, 61012



### APMR-V Model - 52014, 52016 & 62014, 62016

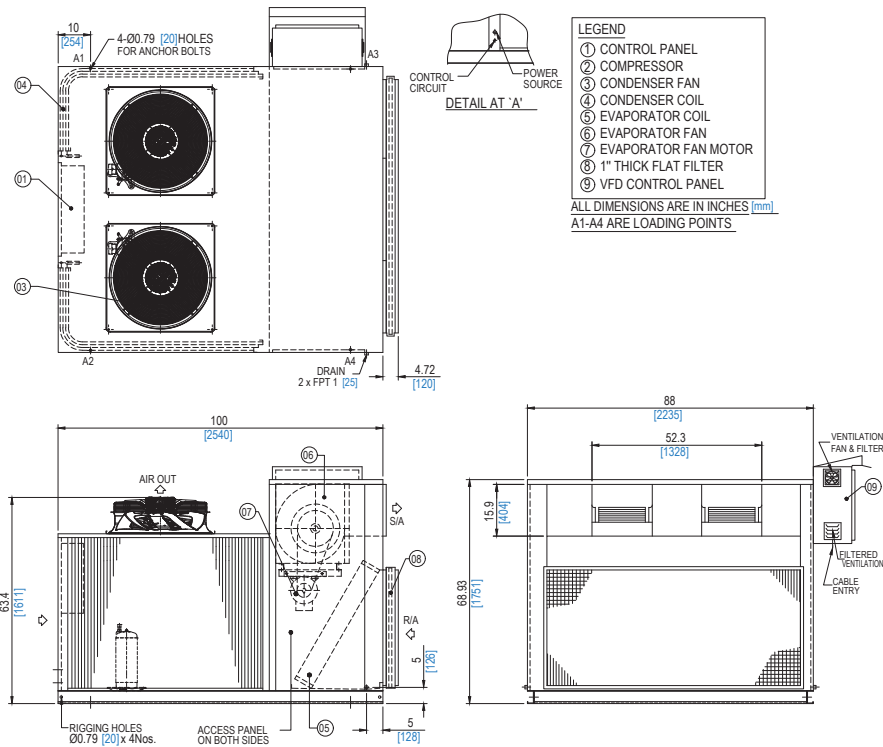


#### Note :

1. Drawings are not contractually binding. 2. Before designing an installation, consult the certified drawings, available on request
3. For single unit and multiple unit installation or unit is installing near to the wall, Please refer to the recommended clearance drawings (26).
4. Dimensions shown in standard drawing are suitable only for open trailers. In case of closed container please consult SKM as the unit dimension will change.

## Dimensional Data

### APMR-V Model - 52018, 52020 & 62018, 62020



### APMR-V Model - 52025-52030 & 62025-62030

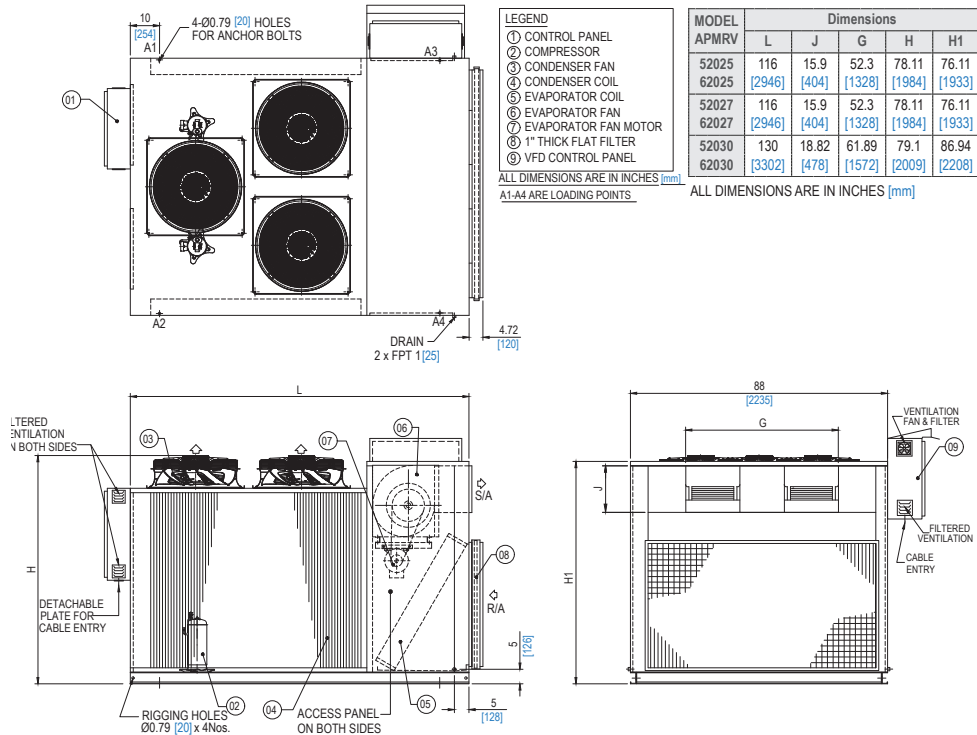


Table 14

MODEL	Dimensions				
	L	J	G	H	H1
52025	116	15.9	52.3	78.11	76.11
62025	[2946]	[404]	[1328]	[1984]	[1933]
52027	116	15.9	52.3	78.11	76.11
62027	[2946]	[404]	[1328]	[1984]	[1933]
52030	130	18.82	61.89	79.1	86.94
62030	[3302]	[478]	[1572]	[2009]	[2208]

### Note :

1. Drawings are not contractually binding.
2. Before designing an installation, consult the certified drawings, available on request.
3. For single unit and multiple unit installation or unit is installing near to the wall, please refer to the recommended clearance drawings (26).
4. Dimensions shown in standard drawing are suitable only for open trailers. In case of closed container please consult SKM as the unit dimension will change.



## Loading Points

APMR-V	UNIT	LOADING POINTS				Total Weight
		A1	A2	A3	A4	
51005 / 61005	lb.	237	260	237	221	955
	kg.	108	118	108	100	434
51006 / 61006	lb.	237	260	237	221	955
	kg.	108	118	108	100	434
51008 / 61008	lb.	296	349	295	277	1218
	kg.	135	159	134	126	553
51009 / 61009	lb.	298	351	303	285	1238
	kg.	135	160	138	129	563
51010 / 61010	lb.	298	351	303	285	1238
	kg.	135	160	138	129	563
51011 / 61011	lb.	439	416	480	389	1724
	kg.	200	189	218	177	783
51012 / 61012	lb.	439	416	480	389	1724
	kg.	200	189	218	177	783
52014 / 62014	lb.	490	468	568	450	1976
	kg.	223	213	258	205	898
52016 / 62016	lb.	491	469	571	452	1983
	kg.	223	213	259	205	901
52018 / 62018	lb.	643	611	692	562	2508
	kg.	292	278	314	256	1140
52020 / 62020	lb.	643	611	692	562	2508
	kg.	292	278	314	256	1140
52025 / 62025	lb.	658	587	1035	790	3071
	kg.	299	267	471	359	1396
52027 / 62027	lb.	658	587	1035	790	3071
	kg.	299	267	471	359	1396
52030 / 62030	lb.	821	710	935	733	3199
	kg.	373	323	425	333	1454

Table 15

## Sound Data - 50Hz

MODEL APMR-V	Sound Power Level in dBA ref $10^{-12}$ W								Overall
	Spectrum per Octave band								
	63	125	250	500	1k	2k	4k	8k	dBA
51005	70.3	62.6	60.8	63.5	69.8	70.4	67.6	71.8	77.6
51006	70.3	62.6	60.8	63.5	69.8	70.4	67.6	71.8	77.6
51008	73.3	65.6	63.8	65.6	70.3	70.8	67.9	71.8	78.8
51009	73.3	65.6	63.8	65.6	70.3	70.8	67.9	71.8	78.8
51010	73.3	65.6	63.8	65.6	70.3	70.8	67.9	71.8	78.8
51011	73.3	65.6	64.1	67.4	66.0	78.0	66.7	72.7	80.9
51012	73.3	65.6	64.1	67.4	66.0	78.0	66.7	72.7	80.9
52014	74.3	68.1	67.0	67.7	73.1	74.1	71.3	75.0	81.3
52016	74.3	68.1	67.0	67.7	73.1	74.1	71.3	75.0	81.3
52018	74.3	68.1	67.0	67.7	73.1	74.1	71.3	75.0	81.3
52020	74.3	68.1	67.0	67.7	73.1	74.1	71.3	75.0	81.3
52025	76.1	69.9	68.9	70.7	69.5	81.1	70.8	75.9	84.1
52027	76.1	69.9	68.9	70.7	69.5	81.1	70.8	75.9	84.1
52030	76.1	71.0	69.5	71.0	69.8	81.3	71.2	75.9	84.3

MODEL APMR-V	Sound pressure level in dBA ref $2 \times 10^{-5}$ Pa @ 1meter in free field								Overall
	Spectrum per Octave band								
	63	125	250	500	1k	2k	4k	8k	dBA
51005	59.3	51.6	49.8	52.5	58.8	59.4	56.6	60.8	66.6
51006	59.3	51.6	49.8	52.5	58.8	59.4	56.6	60.8	66.6
51008	62.3	54.6	52.8	54.6	59.3	59.8	56.9	60.8	67.8
51009	62.3	54.6	52.8	54.6	59.3	59.8	56.9	60.8	67.8
51010	62.3	54.6	52.8	54.6	59.3	59.8	56.9	60.8	67.8
51011	62.3	54.6	53.1	56.4	55.0	67.0	55.7	61.7	69.9
51012	62.3	54.6	53.1	56.4	55.0	67.0	55.7	61.7	69.9
52014	63.3	57.1	56.0	56.7	62.1	63.1	60.3	64.0	70.3
52016	63.3	57.1	56.0	56.7	62.1	63.1	60.3	64.0	70.3
52018	63.3	57.1	56.0	56.7	62.1	63.1	60.3	64.0	70.3
52020	63.3	57.1	56.0	56.7	62.1	63.1	60.3	64.0	70.3
52025	65.1	58.9	58.0	59.7	58.5	70.1	59.8	64.9	73.2
52027	65.1	58.9	58.0	59.7	58.5	70.1	59.8	64.9	73.2
52030	65.1	60.0	58.5	60.0	58.8	70.3	60.2	64.9	73.3

Table 16





**Sound Data - 60Hz**

MODEL APMR-V	Sound Power Level in dBA ref 10 <sup>-12</sup> W								Overall
	Spectrum per Octave band								
	63	125	250	500	1k	2k	4k	8k	dBA
61005	71.8	64.2	62.8	64.8	70.1	70.6	67.8	71.8	78.2
61006	71.8	64.2	62.8	64.8	70.1	70.6	67.8	71.8	78.2
61008	74.8	67.2	65.8	67.2	70.8	71.2	68.2	71.8	79.6
61009	74.8	67.2	65.8	67.2	70.8	71.2	68.2	71.8	79.6
61010	74.8	67.2	65.8	67.2	70.8	71.2	68.2	71.8	79.6
61011	74.8	67.2	66.0	68.5	67.3	78.1	67.1	72.7	81.5
61012	74.8	67.2	66.0	68.5	67.3	78.1	67.1	72.7	81.5
62014	74.1	77.0	76.1	78.0	77.7	76.4	73.0	75.1	85.3
62016	74.1	77.0	76.1	78.0	77.7	76.4	73.0	75.1	85.3
62018	74.1	77.0	76.1	78.0	77.7	76.5	73.0	75.1	85.3
62020	74.1	77.0	76.1	78.0	77.7	76.5	73.0	75.1	85.3
62025	75.9	78.8	77.9	79.9	78.2	82.0	73.4	76.1	87.5
62027	75.9	78.8	77.9	79.9	78.2	82.0	73.4	76.1	87.5
62030	75.9	78.9	78.0	80.0	78.2	82.1	73.6	76.1	87.6

MODEL APMR-V	Sound pressure level in dBA ref 2x10 <sup>-5</sup> Pa @ 1meter in free field								Overall
	Spectrum per Octave band								
	63	125	250	500	1k	2k	4k	8k	dBA
61005	60.8	53.2	51.8	53.8	59.1	59.7	56.8	60.8	67.2
61006	60.8	53.2	51.8	53.8	59.1	59.7	56.8	60.8	67.2
61008	63.8	56.2	54.8	56.2	59.8	60.2	57.2	60.8	68.6
61009	63.8	56.2	54.8	56.2	59.8	60.2	57.2	60.8	68.6
61010	63.8	56.2	54.8	56.2	59.8	60.2	57.2	60.8	68.6
61011	63.8	56.2	55.0	57.6	56.3	67.1	56.2	61.7	70.5
61012	63.8	56.2	55.0	57.6	56.3	67.1	56.2	61.7	70.5
62014	63.1	66.0	65.1	67.0	66.7	65.5	62.0	64.1	74.3
62016	63.1	66.0	65.1	67.0	66.7	65.5	62.0	64.1	74.3
62018	63.1	66.0	65.1	67.0	66.7	65.5	62.0	64.1	74.3
62020	63.1	66.0	65.1	67.0	66.7	65.5	62.0	64.1	74.3
62025	64.9	67.8	66.9	68.9	67.2	71.0	62.4	65.1	76.5
62027	64.9	67.8	66.9	68.9	67.2	71.0	62.4	65.1	76.5
62030	64.9	67.9	67.0	69.0	67.2	71.1	62.6	65.1	76.6

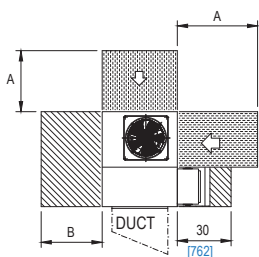
Table 17

## Recommended Clearances

### UNIT INSTALLATION

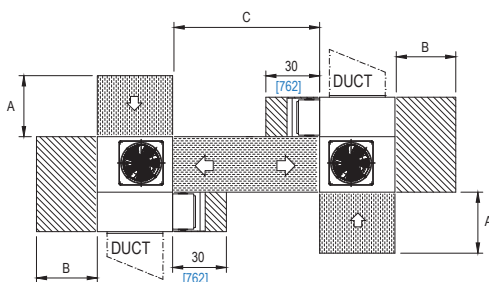
 SPACING FOR SERVICE    
  SPACING FOR AIR FLOW

#### SINGLE UNIT



MODELS: APMR- 51005V, 51006V & 61005V, 61006V

#### MULTIPLE UNIT

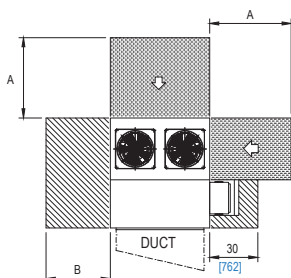


MODELS: APMR- 51005V, 51006V & 61005V, 61006V

MODEL	A	B	C
APMR-51005V	52 [1321]	42 [1069]	88 [2235]
APMR-51006V			

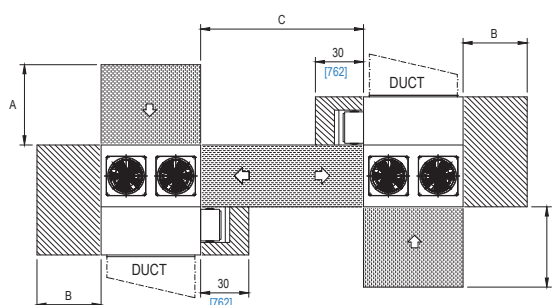
ALL DIMENSIONS ARE IN INCHES [MM] Table 18

#### SINGLE UNIT



MODELS: APMR- 51008V to 51010V & 61008V to 61010V

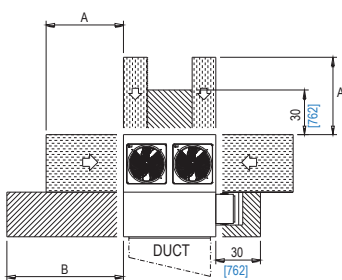
#### MULTIPLE UNIT



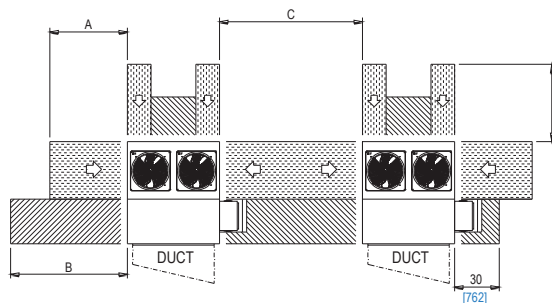
MODELS: APMR- 51008V to 51010V & 61008V to 61010V

MODEL	A	B	C
APMR-51008V	52 [1321]	60 [1524]	88 [2438]
APMR-51009V			
APMR-51010V			

DIMENSIONS ARE IN INCHES [mm] Table 19



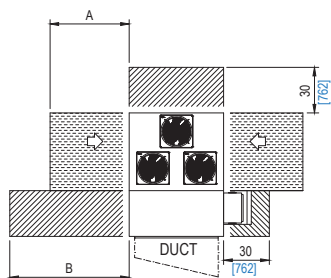
MODELS: APMR- 51011V to 52020V & 61011V to 62020V



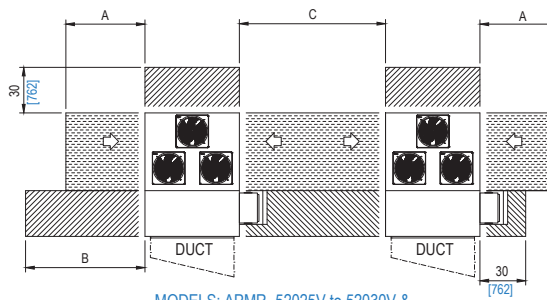
MODELS: APMR- 51011V to 52020V & 61011V to 62020V

MODEL	A	B	C
APMR-51011V	52 [1321]	64 [1626]	88 [2438]
APMR-51012V			
APMR-52014V		68 [1727]	
APMR-52016V			
APMR-52018V		82 [2083]	
APMR-52020V			

DIMENSIONS ARE IN INCHES [mm] Table 20



MODELS: APMR- 52025V to 52030V & 62025V to 62030V



MODELS: APMR- 52025V to 52030V & 62025V to 62030V

MODEL	A	B	C
APMR-52025V	76 [1930]	82 [2083]	136 [3454]
APMR-52027V			
APMR-52030V	82 [2083]		148 [3759]

DIMENSIONS ARE IN INCHES [mm] Table 21



# GUIDE SPECIFICATIONS

## GENERAL

Packaged Air Conditioners shall be composed of compressor(s), condenser & evaporator coils with fans, refrigerant piping, electrical components & enclosing cabinet in one piece. These units shall be factory assembled, internally wired, fully refrigerant charged with R410A, tested under strict quality standards & are suitable for outdoor installation on rooftop or ground level with ducted system. These units shall be capable to operate from 50 °F (10°C) to 125 °F (51.7°C) ambient temperature without failure & shall be rated in accordance with AHRI-340/360 and AHRI- 210/240 standards. Capacity as per attached schedule.

## COMPRESSOR(S)

Compressor shall be BLDC- INVERTER Driven hermetic scroll, refrigerant gas cooled furnished with crankcase heater, and shall be mounted on rubber isolators.

## CONDENSER COIL(S)

Coil shall be air cooled with integral sub-cooling circuit, constructed of seamless copper tubes 3/8" OD mechanically bonded to aluminium or copper with corrugated cross-wave fins with maximum 14 FPI (1.8mm) or 16FPI (1.6MM) spacing. Coil shall be tested against leakage by pressurizing air at 715psig (4930kPa) in coil,, under water, cleaned and dehydrated at the factory.

## CONDENSER FAN(S) & MOTOR(S)

The machine shall be furnished with Electronically Commutated direct driven propeller type discharging air upward condenser fans. Fans shall be constructed of corrosion resistant blades such as heavy gauge aluminum. The fan and drive shall be held in proper alignment.

Fan assemblies shall be provided with heavy gauge, rust resistant steel wire fan guard. All condenser fans shall be individually, statically, and dynamically balanced for vibration free Operation.

Motors shall be Totally Enclosed Air Over, Class-F insulation, IP-55 Protected depending on models and factory wired to unit control panel.

## EVAPORATOR COIL

Evaporator coil shall be constructed of seamless copper tubes 3/8" OD mechanically bonded to aluminium or copper corrugated crosswave fins with maximum 14 FPI (1.8mm) spacing.

Coil consists of headers of seamless copper tubing, Electronic expansion valve(s) & multi-circuited distributor(s).

These coils shall be tested against leakage by air pressure of 450psig (3103kPa) under water. cleaned & dehydrated at the factory. Coil shall conform to AHRI-410.

## EVAPORATOR FAN & MOTOR

Fans of evaporators shall be forward curved, double inlet double width (DIDW), centrifugal type, statically & dynamically balanced, mounted on a single heavy duty shaft with permanently lubricated bearings and belt driven by V belt with an adjustable variable pitch motor pulley.

Motor shall be Totally Enclosed Fan Cooled (TEFC), 4 poles, class-F insulated, minimum IP55 protection & wired to unit control panel.

## REFRIGERANT PIPING

The refrigerant circuit piping shall be fabricated from ACR grade copper piping, with 1 & 2 refrigeration circuits, each liquid line shall include, shut off valve, filter drier, solenoid valve, sight glass and Electronic expansion valve.

Oil separator and discharge line check valve is a standard feature of this series.

Suction line shall be insulated with 1/2" (12mm) wall thickness enclosed cell pipe insulation with maximum K factor 0.28 Btu.in /ft2.h.°F. (0.040 W/mK).

## CASING

Unit casing shall be made of zinc coated galvanized steel sheets conforming to JIS-G3302 and ASTM A653 which shall be phosphatized and then electrostatically dry powder coated of approx.60 microns to provide an extremely tough, scratch resistance, excellent anticorrosive protection that can pass 1000 hrs in 5% salt spray testing at 95°F (35°C) and 95% relative humidity as per ASTM B117.

Evaporator section shall be sealed with vinyl gaskets and completely insulated faced with black glass tissue (BGT) heavy density, fire retardant, 32 Kg/m3 density having Max. K factor 0.23 Btu.in /ft2.h.°F (0.033 W/mK) and permanent odorless fibre glass insulation of minimum 1" (25mm) thickness.

## FILTER SECTION

Flat Filter Section incorporating 1" (25mm) thick is provided as standard and 2" (50mm) thick filter having an average arrestance efficiency of 54% as per ASHRAE Standard 52.1 or equivalent can be provided as an option.

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