APMR Series
Packaged Air Conditioners

REFRIGERANT
R 22

Range 5 TR to 28 TR
(17 kW to 98 kW)

50Hz

R-410A
REFRIGERANT

CE
Introduction

SKM APMR New Packaged Air Conditioners
Series are designed and manufactured to meet
the requirements of Gulf’s severe climatic
conditions and are built specifically for ducted
systems which will enable them to be installed
easily on roof tops or on the ground.

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

Available in 15 different sizes from 5 to 28
TR (17kW to 98kW) in 50 Hz at nominal
AHRI conditions. APMR 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), based on specific
conditions & model applies. Two independent
refrigeration circuits are provided where two
compressors are used.

APMR units are designed, rated and
manufactured in accordance with AHRI
210/240 and 340/360 standards.

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

The **APMR** Series 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** 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** 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 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.
- Electronic control board for the unit operation.
- Typically, much heavier gauge tubing and thicker fins for ruggedness and long life.

Main Component Features

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

Compressors

Compressors used in **APMR** packaged unit series are hermetically sealed, compact scroll with the following features:

- High Efficiency.
- Quiet operation, Low Sound levels.
- Compact and light.
- Limited wear.
- 70% fewer moving parts than comparably sized reciprocating compressors.
- Unique ability to hadle liquid refrigerant.
- Suction gas motor cooling.
- Suction screen.
- Centrifugal oil pumps with filter and magnet.
- Brazed fittings or Rotalock options.
- Two refrigerant circuits on larger units provides efficient part load.
- No internal valves.

Condenser Coils

Condenser coils are manufactured from Corrugated fin and Hi-X seamless copper tubes mechanically bonded to aluminium fins to ensure optimum heat transfer. All coils are tested against leakage by high air pressure 715psig (4930kPa) under water. An integral subcooling circuit is incorporated in the lower section of the condenser to increase system capacity. The additional condenser surface provides more cooling using less energy at no additional cost.

Condenser Fans

Condenser fans are propeller type with aluminum alloy blades and are directly driven by electric motors. Motors are Totally Enclosed Air Over (TEAO), six pole or four pole with Class F insulation and IP54/55 protection depending on models. Complete fan assembly is provided with fan guard.

Evaporator

Evaporator coils are manufactured from Hi-X seamless copper tubes mechanically bonded to aluminium Corrugated fins to ensure optimum heat transfer. All evaporator coils are tested against leakage by high air pressure of 450 psig (3100kPa) under water. Coils conform to AHRI-410.

Evaporator Fan & Drive

Evaporator fans are forward curved centrifugal double inlet, double width, statically and dynamically balanced. Bearings used in the fans are self aligning and lubricated for life. Evaporator fans are belt driven and use “V” belts with an adjustable variable pitch motor pulley resulting in an accurate fan air flow adjustment.

Fans are driven by Totally Enclosed, IP-55 Protected, 4 pole Class F insulated electric motors. The motors are factory wired to the control panel where the motor starters are located to control the operation of the motors. The motors conform to relevant IEC standards.

Casing and Structure

The unit casing used in **APMR** series is made of hot dip galvanized (zinc coated) steel sheets, conforming to JIS-G 3302 and ASTMA653, which is phosphatized and baked after an electrostatic powder coat of approx. 60 microns. 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 evaporator section is insulated from all the sides with 1” thick fiber glass insulation with extremely tough and durable black composite surface. The insulation cum sound liner meets the fire requirements of NFPA90A & 90B and is secured with mechanical fasteners in addition to water resistant adhesive.
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.

Benefits
• No ozone depletion potential or phase-out date
Using chlorine-free R-410A with zero Ozone Depletion Potential (ODP) helps protect both the environment and your investment. That's because new equipment using R-410A faces no mandated phase-out date over a 20 to 30 year equipment life expectancy.
• Reduced service costs
R-410A refrigerant has no significant “glide.” If a leak occurs, only the lost refrigerant must be replaced.

Attention points
• Pressure level: 1.6 times of R-22.
• Lubricating oil: Ester Oil absorb moisture easily (Never mix with mineral oil).
• Tools exclusive for R-410A.
• Never mix R-410A with other refrigerant.
• Driers, valves and even copper tube must be approved for use with R-410A.
• Never allow refrigerant cylinders to exceed 60°C.

Control Panel
The APMR packaged Air Conditioners are provided with IP-54 control panel enclosure comprising all starting, operating & safety controls. The panel is factory wired in accordance with NEC 430 & 440, labelled, tagged and features 220V / 240V controls.
• Starting contactors for compressors and motors.
• Internal overload protection for compressors.
• Internal or External overload protection for the motors (depending on the model).
• Electronic control board for unit operation.
• Diagnostic LEDs on the control board for easy troubleshooting .
• Compressor short cycling protection.
• Control switch for unit on/off.
• Control circuit breaker.
• Power and control circuit terminal blocks.
• High pressure protection.
• Low pressure protection.

Optional Features
As with all SKM air conditioning units, the APMR Series Packaged Units are available with multitude of optional features available on request:

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.

Temperature Based Economizer (ECRU)
Simple temperature based economizer.

2” (50mm) Flat Filter Section (FSIP2)
For heavy filtration need a section can be provided without or with aluminium cleanable filter.

Alternative Condenser Material
Made of copper tubes and alternative fin material and/or protective coating.
• Pre Coated aluminum fins (FAP).
• Aluminum Fins with Aeris post Coat Protection (FAA).
• Copper Fins (FC).
• Copper Fins with Aeris post Coat Protection (FCA).

Alternative Evaporator Material
Made of copper tubes and alternative fin material and/or protective coating.
• Pre Coated aluminum fins (EFAP).
• Aluminum Fins with Aeris post Coat Protection (EFAA).
• Copper Fins (EFC).
• Copper Fins with Aeris post Coat Protectionn (EFCA).

Anti-Freeze Thermostat (AFT)
For evaporator coil freeze -up protection.

Western Make Scroll Compressor (WMSC)
Western make scroll compressor.

Compressor Run Hour Meter (RHM)
To monitor operating hours of each compressor.

Circuit Breaker for compressor (CBC)
For those electrical specification which requires additional short circuit and overload protection for the compressors.

Rotalock Valves on compressors (RVC)
For additional facilitation of maintenance of unit.

External Overload Protection (EOP)
For those electrical specification requires additional overload protection for the compressors.(Not required with CBC option)
**Electric Heating (HTR1)**

Electric heating batteries are made up of finned heating elements, constructed from high quality 80/20 nickel chrome resistance wire centred in metal tube by compressed magnesium oxide. Helical fins are tightly wound around the tubular heating element. Heater batteries when ordered comes with stage contactors, primary auto reset thermal safety cut-out, secondary manual reset thermal safety cut-out and air flow switch.

Control of the heaters will be from the unit controller. Following are the optional kW ratings for electric heater. Ratings other than those specified here can be supplied on request. Consult SKM for details.

<table>
<thead>
<tr>
<th>MODEL</th>
<th>HEATER (kW)</th>
<th>STAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>51050</td>
<td>4.5</td>
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<tr>
<td>51060</td>
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<tr>
<td>51080</td>
<td>18</td>
<td>2</td>
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<tr>
<td>51100</td>
<td></td>
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<tr>
<td>52300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>52340</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Pump Down Facility with solenoid Valve (PDS)**

The compressors will switch off each time with a Pumpdown Cycle in order to prevent Liquid refrigerant migration to the compressor during Off Cycle periods. Applicable for models from APMR-51050 to 52270

**Extra Ball Valve (XFV)**

Extra ball valve can be incorporated in the liquid line.

**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.

**Manual Reset Type High Pressure Switch (MHP)**

To replace standard auto reset, capsule type pressure switch.

**Liquid Line Sight Glass (RSG)**

For monitoring refrigerant charge and to provide visual indication of moisture presence in the system.

**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. Insulation under drain pan as per SKM standard.

**Marine Painted Inner Skin (IS-MP)**

**Painted Inner Skin (IS-P)**

**Marine Paint (MP)**

To provide increased corrosion resistance for coastal environments and offshore location.

**Stainless Steel SS316L Fasteners (SSF)**

**Anti-corrosion clear coating for fasteners (JHT)**

Anti-corrosion clear coating for fasteners applicable with SSF option.

**Marine Painted Condenser Coil end plate (MP-CCEP)**

**Marine Painted Evaporator Coil end plate (MP-ECEP)**

**SS316L Laser Printed Unit Tag Plates (TO-SS-LA)**
Up Size Evaporator Motor**
Unit with one up size evaporator motor.

Circuit breaker for Motors**
For those electrical specification which requires additional short circuit and overload protection for the fan motors.

IP 55 Control Panel
Control Panel for special applications to meet IP55 requirements.

Main Isolator (without door interlock)
For main power isolation. (Consult SKM)

Control Transformer
This option is necessary and available for unit models rated for 440V/3PH/50Hz or power supplies without neutral. When ordering for these voltages, this option must be ordered.

BMS Interface Volt Free Contacts
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.

Voltage Monitor Module
Provides protection in the event of:
• Phase burn-out.
• Phase reversal.
• Under / over voltage on the incoming line voltage.

Voltage Monitoring Module as per DEWA
Under voltage relay as per DEWA regulations. This option is available for Dubai, UAE only. (VMM option is not required if this option is opted.)

Ball Valve
Ball valve can be incorporated in the liquid line.

Fan Cycling Switch
Fan Cycling switch for single compressor units with two condenser fans. (Not required with AMCS option)

Fire Alarm Interlock
To provide provision for fire alarm interlock.

Options for Field Installation

Anti-vibration mounts
Recomended for roof mounted units or other location in the vicinity of occupied spaces. where noise may be objectionable.

Low Voltage Thermostat
For wall mounting and for cooling/heating operation with 1 or 2 stages as per model. (Not required with AMCS/CHTS-Wifi options).

Low Voltage Thermostat with Wi-Fi
For wall mounting and for cooling/heating operation with 1 or 2 stages as per model and with wireless connectivity or Wi-Fi. (Not required with AMCS/CHTS options).

• DTS-TH – Duct Temperature Sensor for 24V Thermostat *
  (In order to control the unit based on return/supply air duct temperature.) (This is not required with AMCS options)

Note:
- *DTS & BMSP options are only available along with AMCS option.
- *DTS-TH option is only available along with CHTS/CHTS-Wifi options.
- **If CBM combined with USM option please consult SKM as component might changed.
- Whenever multiple options related to unit control, please consult SKM for the drawings, as the size of the control panel might change.
**ENGINEERING SPECIFICATIONS - 50 Hz**

<table>
<thead>
<tr>
<th>Model</th>
<th>APMR</th>
<th>51050</th>
<th>51060</th>
<th>51075</th>
<th>51080</th>
<th>51100</th>
<th>52115</th>
<th>52125</th>
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<tbody>
<tr>
<td>Cooling Capacity (1)</td>
<td>MBh</td>
<td>53.4</td>
<td>59.0</td>
<td>74.4</td>
<td>80.4</td>
<td>98.6</td>
<td>113.7</td>
<td>120.0</td>
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<tr>
<td></td>
<td>kW</td>
<td>15.6</td>
<td>17.3</td>
<td>21.8</td>
<td>23.6</td>
<td>28.9</td>
<td>33.3</td>
<td>35.2</td>
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<tr>
<td>Cooling Capacity (2)</td>
<td>MBh</td>
<td>47.4</td>
<td>52.4</td>
<td>66.4</td>
<td>70.8</td>
<td>87.6</td>
<td>99.9</td>
<td>106.8</td>
</tr>
<tr>
<td></td>
<td>kW</td>
<td>13.9</td>
<td>15.4</td>
<td>19.5</td>
<td>20.7</td>
<td>25.7</td>
<td>29.3</td>
<td>31.3</td>
</tr>
<tr>
<td>Cooling Capacity (3)</td>
<td>MBh</td>
<td>46.1</td>
<td>51.1</td>
<td>64.6</td>
<td>68.8</td>
<td>85.2</td>
<td>97.2</td>
<td>103.8</td>
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<tr>
<td></td>
<td>kW</td>
<td>13.5</td>
<td>15.0</td>
<td>18.9</td>
<td>20.2</td>
<td>25.0</td>
<td>28.5</td>
<td>30.4</td>
</tr>
</tbody>
</table>

**Compressor**
- Type: Hermetic Scroll
- Quantity: 1
- Oil Charge: US Gal
  - 0.45
  - 0.47
  - 0.48
  - 0.71
  - 0.9
  - 0.9
  - 0.94
- Litre
  - 1.7
  - 1.77
  - 1.8
  - 2.7
  - 3.4
  - 3.4
  - 3.54

**Condenser Coil**
- Type: Hi-X tubes
- Face Area: ft
  - 19.4
  - 26.7
  - 26.7
  - 26.7
  - 26.7
  - 26.7
  - 40
- m
  - 1.8
  - 2.5
  - 2.5
  - 2.5
  - 2.5
  - 2.5
  - 3.7

**Condenser Fan**
- Code / Quantity: 550/1
  - 550/2
  - 550/2
  - 550/2
  - 550/2
  - 550/2
  - 630/2
- Type: Propeller Direct Drive

**Condenser Motor**
- Type: Totally Enclosed Air Over, Class-F insulation, 4 pole or 6 pole, IP54 protected

**Evaporator Coil**
- Type: Hi-X-Tubes
- Face Area: ft
  - 4.6
  - 4.6
  - 6.4
  - 6.4
  - 8.7
  - 9.7
  - 9.7
- m
  - 0.4
  - 0.4
  - 0.6
  - 0.6
  - 0.8
  - 0.9
  - 0.9

**Evaporator Fan**
- Code / Quantity: 10/10
  - 10/10
  - 10/10
  - 12/12
  - 12/12
  - 12/12
  - 12/12
- Air Flow Rate: cfm
  - 1670
  - 2000
  - 2400
  - 2900
  - 3220
  - 4000
  - 4000
- l/s
  - 788
  - 944
  - 1133
  - 1369
  - 1520
  - 1888
  - 1888

**Evaporator Motor**
- Type: Totally Enclosed Fan Cooled, Class-F insulation, 4-pole, IP55 Protected.
- Size: kW
  - 0.55
  - 0.55
  - 0.75
  - 1.1
  - 1.1
  - 1.5
  - 1.5

**Refrigerant (R - 410A) Operating Charge**
- lbs
  - 7.5
  - 10
  - 10
  - 10
  - 17
  - 17
  - 26
- kg
  - 3.4
  - 4.5
  - 4.5
  - 4.5
  - 7.7
  - 7.7
  - 11.8

**Number of Refrigerant Circuits**
- -
  - 1
  - 1
  - 1
  - 1
  - 2
  - 2

**Unit Operating Weight**
- lbs
  - 673
  - 783
  - 800
  - 887
  - 1045
  - 1207
  - 1428
- kg
  - 305
  - 355
  - 363
  - 402
  - 474
  - 547
  - 648

**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 114.8°F (46°C) dry bulb.
3. 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.
4. Capacity is gross capacity which does not include the effect of evaporator fan motor heat.
**ENGINEERING SPECIFICATIONS - 50 Hz**

<table>
<thead>
<tr>
<th>Model</th>
<th>APMR</th>
<th>52150</th>
<th>52170</th>
<th>52200</th>
<th>52230</th>
<th>52240</th>
<th>52270</th>
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<th>52340</th>
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<tr>
<td>Cooling Capacity (1)</td>
<td>MBh</td>
<td>150.3</td>
<td>168.1</td>
<td>194.6</td>
<td>227.1</td>
<td>233.7</td>
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<td>299.5</td>
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<tr>
<td></td>
<td>kW</td>
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<tr>
<td>Cooling Capacity (2)</td>
<td>MBh</td>
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<td>198.3</td>
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<td>229.1</td>
<td>259.9</td>
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<tr>
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<td>kW</td>
<td>39.4</td>
<td>43.8</td>
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<td>58.1</td>
<td>60.6</td>
<td>67.1</td>
<td>76.2</td>
<td>87.6</td>
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<tr>
<td>Cooling Capacity (3)</td>
<td>MBh</td>
<td>131.0</td>
<td>145.1</td>
<td>168.3</td>
<td>192.8</td>
<td>200.9</td>
<td>222.5</td>
<td>252.3</td>
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<tr>
<td></td>
<td>kW</td>
<td>38.4</td>
<td>42.5</td>
<td>49.3</td>
<td>56.5</td>
<td>58.9</td>
<td>65.2</td>
<td>73.9</td>
<td>85.2</td>
</tr>
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</table>

**Compressor**

- Type: Hermetic Scroll
- Quantity: 2
- Oil Charge: US Gal, 0.95, 1.43, 1.80, 1.80, 1.80, 1.80, 1.80, 1.80

**Condenser**

- Type: Hi-X tubes
- Face Area: \( \text{ft}^2 \) 40.0, 40.0, 48.0, 48.0, 54.7, 54.7, 53.3, 53.3
- \( \text{m}^2 \) 3.7, 3.7, 4.5, 4.5, 5.1, 5.1, 5.0, 5.0

**Condenser Motor**

- Code / Quantity: 630/2, 710/2, 710/2, 710/2, 800/2, 800/2, 800/2, 800/2
- Type: Totally Enclosed Air Over, Class-F insulation, 6 pole, IP54/IP55 depending on models

**Evaporator**

- Type: Hi-X-Tubes
- Face Area: \( \text{ft}^2 \) 12.5, 13.3, 15.6, 15.6, 19.5, 19.5, 21.7, 21.7
- \( \text{m}^2 \) 1.2, 1.2, 1.4, 1.4, 1.8, 1.8, 2.0, 2.0

**Evaporator Fan**

- Code / Qty.: 15/15, 12/12 R2, 12/12 R2, 12/12 R2, 15/15 R2, 15/15 R2, 15/15 R2, 15/15 R2
- Air Flow Rate: cfm, 5000, 6000, 7000, 7000, 8000, 8000, 9100, 10500
- l/s, 2360, 2832, 3304, 3304, 3776, 3776, 4295, 4955

**Evaporator Motor**

- Type: Totally Enclosed Fan Cooled, Class-F insulation, 4-pole, IP55 Protected
- Size: kW, 2.2, 2.2, 3, 3, 3, 3, 3, 4

**Refrigerant (R - 410A)**

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<tr>
<th>Operating Charge</th>
<th>lbs</th>
<th>26.0</th>
<th>26.0</th>
<th>30.0</th>
<th>31.0</th>
<th>34.0</th>
<th>36.0</th>
<th>51.0</th>
<th>52.0</th>
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<tbody>
<tr>
<td></td>
<td>kg</td>
<td>11.8</td>
<td>11.8</td>
<td>13.6</td>
<td>14.1</td>
<td>15.4</td>
<td>16.3</td>
<td>23.1</td>
<td>23.6</td>
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</table>

**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 114.8°F (46°C) dry bulb.
3. 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.
4. Capacity is gross capacity which does not include the effect of evaporator fan motor heat.
### GROSS CAPACITY RATINGS - 50 Hz

<table>
<thead>
<tr>
<th>Model</th>
<th>APR</th>
<th>EWB</th>
<th>Total Capacity</th>
<th>Sensible Capacity</th>
<th>RH Total Capacity</th>
<th>SH Total Capacity</th>
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See Notes on page 10
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<tr>
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<th>Power Options</th>
<th>Condenser Entering Air Temperature</th>
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Notes:
1. See Page 2 for legend.
2. Ratings are based on 80°F (27°C) DB evaporator air entering temperature.
3. Direct interoperation is permissible. Do not extrapolate.
4. SKM Computer Selection Software are available for quick and accurate selections.
5. Capacity is gross capacity which does not include the effect of evaporator fan motor heat.
6. Power input (PI) 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 12) should be referred for the same.
### Fan Performance - 50 Hz

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<th>Airflow Rate (cfm</th>
<th>in l/s)</th>
<th>Pressure (Pa)</th>
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<td>5.0 (200)</td>
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<td>6.25 (250)</td>
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<td>11.25 (450)</td>
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**Notes:**
1. Areas shaded in blue indicate factory setting of RPM.
2. Areas shaded in grey indicate operating range outside the standard motor. Shift to larger motor size in this area.
3. Internal static pressure is based on pressure drops through evaporator coil, fan casing and 1" flat filter.
4. The shown RPM range is with standard pulleys combination.
ELECTRICAL DATA

### Power Supply: 380~415V/3PH/50Hz

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### Power Supply: 440V/3PH/50Hz

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#### Table 7

#### Table 8

---

**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.
- **ICF** Maximum Instantaneous Current Flow

**Note:** Voltage imbalance not to exceed ± 2 % of the rated voltage.
Field Connections

APMR series self-contained heavy duty air cooled packaged units are designed for minimum field interaction. Power hook ups and control wiring of room thermostat as per field wiring diagram is all that is required to electrically connect any model of APMR series. Every APMR series packaged air conditioning unit requires, at most, field installed fused disconnect switches or circuit breakers and room thermostat.

Refer below for schematic representation of required field electrical hook-ups for a standard APMR series packaged air conditioning unit. All field wiring must be done in accordance with applicable local & national codes.

For the maximum fuse ampere for fuse sizing & minimum circuit amps for cable sizing, see page 12.

The APMR series is then ready to provide cooling, on demand.

Field Wiring Requirement Schematic

**The APMR series units rated for 440V/3Ph/50Hz or power supplies with out neutral require separate source of control power supply through field supplied and installed 15A/220V fused control disconnect switch or order with factory built in option ‘CXT’.**
Typical Wiring Diagram

APMR Model - 51050

APMR Models - 51060, 51075, 51080 & 51100
Typical Wiring Diagram

APMR Models - 52115, 52125 & 52150

APMR Models - 52170 to 52270
Typical Wiring Diagram

APMR Models - 52300 & 52340

**LEGEND**

- Field Wiring & Field Supplied Devices
- CR: Crank Case Heater
- CS: Control Switch
- CM: Compressor Motor
- OL: Overload Relay
- ELM: Evaporator Fan Motor
- CM1: Compressor Motor 1
- CM2: Compressor Motor 2
- CFM1: Condenser Fan Motor 1
- CFM2: Condenser Fan Motor 2
- LPS1: Low Pressure Switch 1
- LPS2: Low Pressure Switch 2
- HPS1: High Pressure Switch 1
- HPS2: High Pressure Switch 2
- LSV1: Liquid Line Solenoid Valve 1
- LSV2: Liquid Line Solenoid Valve 2
- ECB: Electronic Control Board
- ECB: Electronic Control Board
- TFR: Transformer
- PTB: Power Terminal Block
- CTB: Control Terminal Block
- ECB: Electronic Control Board
- OL: Overload Relay
- LPS: Low Pressure Switch
- HPS: High Pressure Switch
- CS: Control Switch
- MCB: Miniature Circuit Breaker
- TFR: Transformer
- TK: Thermostat (by others)
- POWER SUPPLY (V/Ph/Hz)

**NOTE**

- Typical Wiring Diagram Shown is Suitable for 380~415V/3Ph/50Hz *
- Only for 440V/3Ph/50Hz, please consult SKM

Dimensional Data

APMR Model - 51050

**Table 9**

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**Legend**
- 01: CONTROL PANEL
- 02: COMPRESSOR
- 03: CONDENSER COIL
- 04: CONDENSER FAN
- 05: COMPRESSOR COIL
- 06: EAVATOR COIL
- 07: EAVATOR FAN
- 08: EAVATOR FAN MOTOR
- 09: 1" THICK FLAT FILTER

All dimensions are in inches [mm].
A1-A4 are loading points.
F=3.94 [100] FOR 1" FLAT FILTER (STANDARD)
F=4.95 [125] FOR 2" FLAT FILTER (OPTIONAL)

APMR Models - 51060 to 52115

**Table 9**

<table>
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<th>Model</th>
<th>L</th>
<th>W</th>
<th>A</th>
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**Model with Two Compressors**

All dimensions are in inches.

S.K.M Air Conditioning LLC
Dimensional Data

APMR Models - 52125 & 52150

ALL DIMENSIONS ARE IN INCHES [MM]

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DIMENSIONS

Table 10

APMR Models - 52170 to 52270

ALL DIMENSIONS ARE IN INCHES [MM]

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DIMENSIONS

Table 11
Dimensional Data

APMR Models - 52300 & 52340

Legend:
1. Control Panel
2. Compressor
3. Condenser Fan
4. Condenser Coil
5. Evaporator Coil
6. Evaporator Fan
7. Evaporator Fan Motor
8. 1" Thick Flat Filter

All dimensions are in inches (max)
F+0.94 [100] for 1" flat filter (standard)
F+4.69 [120] for 2" flat filter (optional)
### Loading Points

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<tr>
<th>MODEL APMR</th>
<th>LOAD AT EACH POINT Lbs (Kgs)</th>
<th>TOTAL WEIGHT</th>
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Table 12
**Recommended Clearances**

<table>
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<th>MODEL APMR</th>
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ALL DIMENSIONS ARE IN INCHES [MM]

**APMR-51050**

**APMR-51060 to 52115**

**SINGLE UNIT**

**APMR-51050**

**SPACING FOR SERVICE**

**SPACING FOR AIR FLOW**

**Table 13**
Recommended Clearances

<table>
<thead>
<tr>
<th>MODEL</th>
<th>A</th>
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<tbody>
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</tr>
</tbody>
</table>

ALL DIMENSIONS ARE IN INCHES [MM]

SPACING FOR AIR FLOW

SPACING FOR SERVICE

Table 14
Installation and Commissioning

- Install the unit in such a location which is flat and strong enough to support its weight.
- Provide a trap of over 2" (50mm) in the drain piping for water seal.
- All field wiring must comply with applicable local and national codes.
- Service spacing should be provided as shown in the figure. If any obstacles are around the unit, distributed air is short-circuited so that the unit stops frequently and access to the unit is difficult for inspection and aftersales services.
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.

COMPRESSOR(S)
Compressor shall be hermetic scroll, refrigerant gas cooled furnished with internal overload protection device, crankcase heater, and shall be mounted on rubber isolators.

CONDENSER COIL(S)
Condenser coils shall be air cooled with integral sub cooler, constructed of special inner grooved seamless copper tubes 3/8” OD mechanically expanded into corrugated aluminum cross fins with maximum 16 fpi (1.6mm) spacing. These coils shall be tested against leakage by high air pressure air 715psig (4930kPa) under water, cleaned & dehydrated at the factory.

CONDENSER FAN(S) & MOTOR(S)
Condenser Fans shall be direct driven propeller type discharging air vertically upward, equipped with statically & dynamically balanced aluminum alloy blades, inherent corrosion resistant shaft & PVC coated steel wire fan guard. Condenser fan motor(s) shall be Totally Enclosed Air Over (TEAO), 4 pole or 6 pole with class-F insulation, minimum IP-54 protection & wired to unit control panel.

EVAPORATOR COIL
Evaporator coil shall be constructed of Hi-X copper tubes 3/8” OD mechanically bonded to aluminum (copper) corrugated fins with maximum 14 fpi (1.8mm) spacing. Coil consists of headers of seamless copper tubing, thermostatic expansion valve(s) & multi-circuited distributor(s). These coils shall be tested against leakage by high air pressure 450psig(3100kPa) under water, cleaned & dehydrated at the factory. Coil shall conform to AHRI-410.

EVAPORATOR FAN & MOTOR
Fans of evaporator 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 belts 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 filter drier and thermostatic expansion valve.

Suction line shall be insulated with ½” (12mm) wall thickness enclosed cell pipe insulation with maximum K factor 0.28 Btu.in /ft² .h.°F. (0.040 W/mK).

CASING
Casing shall be made of hot dip galvanized (zinc coated), phosphatized steel sheets which are then electrostatically polyester powder coated to provide an extremely tough, scratch resistance & excellent anti-corrosive protection. Casing shall pass 1000 hours in 5% salt spray testing at 95°F (35°C) & 95% relative humidity as per ASTM B117. Evaporator section shall be sealed with vinyl gaskets & completely insulated faced with black glass tissue (BGT) heavy density, fire retardant, permanent odorless fiberglass insulation of minimum 1” (25 mm) thickness and 32 kg/m³ density having maximum K factor 0.23 Btu.in/ft² h°F. (0.033 W /m °k). Unit casing shall be provided with access panels for easy service and maintenance of all unit parts.

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.

CONTROL PANEL
The panel shall be factory wired and confirm to IP-54 requirements. Control panel shall contain compressor and motor starting contactors, electronic control board for unit operation, compressor anti-recycle time delay, control on/off switch, control circuit breaker and power & control terminal blocks. High and Low pressure switches should be provided for protection.