



PACKAGED AIR CONDITIONING UNIT



Overview

Azar Nasim Packaged Air Conditioners are designed and manufactured to meet the requirements of the every severe climatic conditions and are built specifically for outdoor installations, either on ground or roof level.

Mixed air passes through the filters, the supply fan, and the cooling coil before being discharged from the air handler. Unlike the example fan-coil unit that was installed in the conditioned space, the central air handler needs a method for delivering the supply air to the conditioned space(s).

Azar Nasim Packaged Air Conditioners are ideal for warehouses, large halls, schools, mosques, or wherever the requirement is for a heavy-duty unit with a hermetic compressor.

AN PU Series Air cooled package (hermetic scroll) are available in 10 models covering nominal capacity ranges from 5 TR – 80 TR(Integrated Types). Other capacities are available according to customers' orders.(Separated Types)

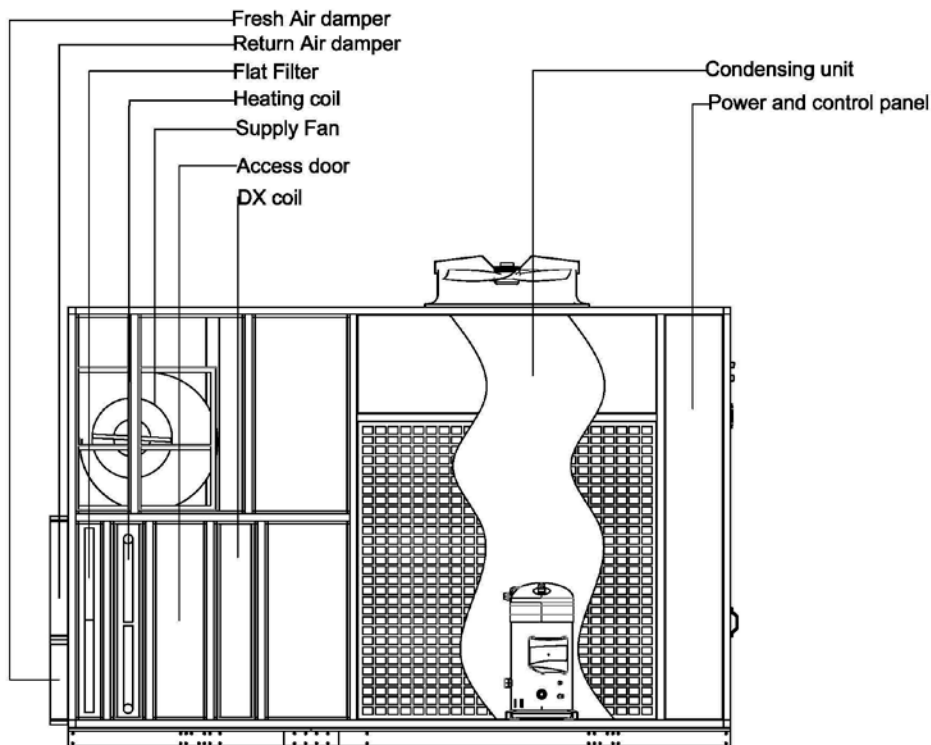
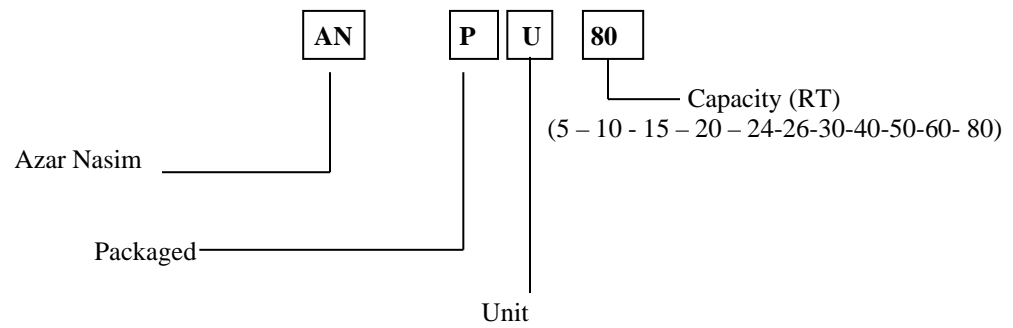
Azar Nasim units are designed to operate in a wide ambient temperature range from 50°F to 125.6°F, based on specific conditions & model applies.

AN PU Series Packaged Air Conditioners are completely assembled, internally wired, charged with R-22 , R134a and 407c refrigerants at factory, tested before dispatch and ready for installation. What is required on site is connecting ducting and power supply. This greatly reduces installation work and costs. They are designed for ducted systems which will enable them to be installed on roof tops or on the ground.



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Nomenclature



General Scheme

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Component Features

The common standard features of all AN PU series packaged units include the following parts.

Compressor

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

- High Efficiency.
- Quite operation, Low Sound levels.
- Better debris handling.
- Self compensating of wear (“wears-in” vs. “wears-out”).
- 70% fewer moving parts than comparably sized reciprocating compressors.
- Internal motor protection / Advanced scroll temperature protection.
- Suction gas motor cooling.
- Suction screen.
- Disc type check valve.
- Centrifugal oil pumps with filter and magnet.
- Brazed fittings or Rotalock options.

Additionally, according to customer requirements reciprocating compressors are available.



Condenser Coil

Condenser coils are manufactured from corrugated aluminum fins and seamless copper tubes mechanically bonded to aluminum fins to ensure optimum heat transfer. All coils are tested against leakage by air pressure 420 psi. 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.



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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 with Class F insulation and IP 54/55 protection depending on models. Complete fan assembly is provided with fan guard.



Expansion Valves

Electronic Expansion Valve regulates the flow of refrigerant from the liquid line to the evaporator by using a pressure-actuated diaphragm. It maintains a constant pressure in the evaporator.



Thermostatic Expansion Valve uses a valve mechanism to control the flow of liquid refrigerant into the evaporator coil. The flow is controlled by the pressure in the evaporator.



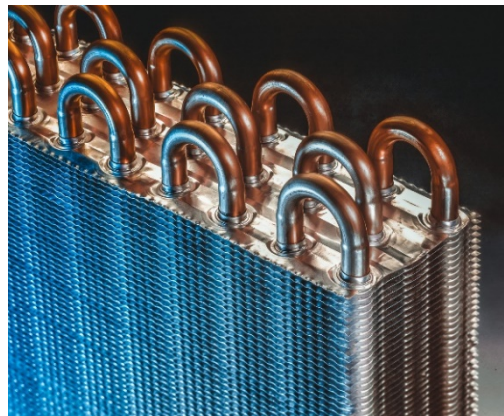
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Evaporator (DX Coil)

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 300 psi . 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.
- Precoated Aluminum fins.

Evaporator coils are rated in accordance with AHRI-410. Evaporator coil supplied with suitable size thermostatic 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



Evaporator Fan

Evaporator fans are forward or backward curved centrifugal double inlet, double width, statically and dynamically balanced. Bearings used in the fans are self-aligning and lubricated for long 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, IP54/55 Protected, 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 standards.



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Filter Section

AN PU series can be with a range of filter sections and filters to meet requirements for the most demanding applications. AN PU series are supplying with 1" aluminum type filter with grade G2 as standard for all models.

- A bag filter section to house 15", 21" or 30" deep bag filters having efficiencies as desired can also be provided, as required. Filter sections come with latches to provide easy access for removal and for maintenance.
- On 100% fresh air applications an initial sand trap louvre can effectively minimize entrance of sand into the air stream.
- High efficiency mini pleated panel filters are available as an alternative for bag filter where space is limited. Filter sections come with latches to provide easy access for removal and for maintenance

Package Type Hygienic Air Handling Units have been developed to meet the requirements of hygienic spaces and clean rooms used by the medicine technology. The units are used to meet air conditions and positive and negative pressure requirements in surgical operating rooms, clean room, food, air defense, space and aviation industries and medicine and chemical industries where similar sterile applications take place.

To help ensure your air conditioner traps as many airborne pollutants as possible, you might like to invest in a HEPA filter, as it can trap up to 99.7% of particles.

Microprocessor Controller and PLC

All **AN PU** series packaged units are equipped with a full function microprocessor-based controller as a standard feature. The controller is factory programmed to control of evaporator fan, compressors and condenser fans (3-way control valve and motorized damper are optional). The controller comes with a built-in keypad and display for simple but meaningful man machine interface. This controller provides complete operational control for the unit and has built-in auto diagnostic capability that can signal normal operation or alarm conditions as well as shutting down the unit or system if necessary.



System Protection

The intelligent microprocessor-based controller monitors all the safeties related to the unit and makes the necessary protections, by shutting down the entire unit or the effected circuit. The protection includes:

- Low suction pressure.
- High discharge pressure.
- Low oil pressure protection.
- High compressor motor temperature.
- Compressor short cycling.
- Evaporator fan motor overload.

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Optional Features

AN PU series heavy duty packaged air - conditioners are available with a multitude of optional features which makes design and selection extremely easy and capable of matching the most stringent of requirements.

Alternative Condenser Material

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

- For Copper Fins, specify.
- For Pre-Coated aluminum fins, specify.

Alternative Evaporator Material

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

- For Copper Fins, specify.
- For Pre-coated aluminum fins, specify (EFAP).

Insulation

An air conditioning system required insulation to reduce energy losses and achieve high efficiency. Besides, insulation prevents condensation on pipes and the body of air conditioners.

Furthermore, insulations are used to soundproof mechanical rooms and air conditioners.

Insulation thickness and density determine the strength of thermal insulation. The thicker the insulation, the better the insulation.

There are 5 common types of insulation used in air conditioning as follow:

1. Closed Cell Insulation
2. Polyurethane (PU) Insulation
3. Fiberglass Insulation
4. Polyethylene (PE) Insulation
5. Rockwool Insulation

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Technical Data													
Scroll Compressor -R22													
Model		AN PU-5	AN PU-10	AN PU-15	AN PU-20	AN PU-24	AN PU-26	AN PU-30	AN PU-40	AN PU-50	AN PU-60	AN PU-80	
Cooling Capacity	TR	4.45	9.47	14.02	18.94	21.72	23.54	28.04	36.34	45.55	55.79	72.68	
	KW	15.646	33.29	49.29	66.59	76.36	82.76	98.5	127.77	160.15	196.15	255.54	
Compressor	Type	Hermetic Scroll											
	Quantity	-	1	1	1	2	2	2	2	2	2	4	
	Oil Charge	Lit	1.7	3.4	3.9	6.8	6.8	6.8	7.8	9.4	12.6	12.6	12.6
Condenser	Coil Face Area	Ft2	14.2	28.4	49.71	56.81	56.81	99.42	99.42	99.42	149.13	149.13	198.84
	Fan Quantity	-	1	1	2	2	4	4	4	6	6	8	
Evaporator Coil	Type	DX											
	Face Area	Ft2	3.2	5.6	11.2	15.2	17.2	18.4	22.4	28.5	36.4	44	52
Evaporator Fan	Type	Centrigugal Duoble Inlet-Belt Drive											
	Air Flow Rate	CFM	1600	2800	5600	7600	8600	9200	11200	14400	18200	22000	26000
Refrigerant Operating Charge	kg	7.5	15	22.5	30	36	39	45	60	75	90	120	
Refrigerant Circuits	-	1	1	1	2	2	2	2	2	2	2	2	
Unit Operating Weight	kg	950	1100	1100	1250	1250	1250	1650	1850	2100	2250	2700	
Note: Evaporator entering air conditions of 80°F/67°F dry bulb/wet bulb and condenser entering air temperature of 95°F dry bulb and 45°F Evaporation Temperature. Capacity for all conditions are gross capacity which does not include the effect of evaporator fan motor heat.													

Technical Data													
Scroll Compressor -R134													
Model		AN PU-5	AN PU-10	AN PU-15	AN PU-20	AN PU-24	AN PU-26	AN PU-30	AN PU-40	AN PU-50	AN PU-60	AN PU-80	
Cooling Capacity	TR	3.04	6.31	9.3	12.62	14.33	15.53	18.6	24.34	30.14	37.93	48.68	
	kW	10.7	22.2	32.7	44.4	50.4	54.6	65.4	85.6	106	133.4	171.15	
Compressor	Type	Hermetic Scroll											
	Quantity	-	1	1	1	2	2	2	2	2	2	4	
	Oil Charge	Lit	1.7	3.4	3.9	6.8	6.8	6.8	7.8	9.4	12.6	12.6	18.8
Condenser	Coil Face Area	Ft ²	14.2	28.4	28.4	56.81	56.81	56.81	56.81	99.42	99.42	99.42	149.13
	Fan Quantity	-	1	1	2	2	2	2	4	4	4	6	
Evaporator Coil	Type	DX											
	Face Area	Ft ²	2.4	4.8	7	9	11	11.5	14	18	22	28	35
Evaporator Fan	Type	Centrigugal Duoble Inlet-Belt Drive											
	Air Flow Rate	CFM	1200	2400	3500	4500	5500	5750	7000	9000	11000	14000	17500
Refrigerant Operating Charge	kg	7.5	15	22.5	30	36	39	45	60	75	90	120	
Refrigerant Circuits	-	1	1	1	2	2	2	2	2	2	2	2	
Unit Operating Weight	kg	950	1100	1100	1250	1250	1250	1650	1850	2100	2250	2500	
Note: Evaporator entering air conditions of 80°F/67°F dry bulb/wet bulb and condenser entering air temperature of 95°F dry bulb and 45°F Evaporation Temperature. Capacity for all conditions are gross capacity which does not include the effect of evaporator fan motor heat.													

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