



LG HVAC SOLUTION

MULTI V™ S TROPICAL



LG Electronics
AE Company, Commercial Air Conditioning

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MULTI VTM S TROPICAL

About LG VRF Technology

Variable Refrigerant Flow is a technology introduced as a system to minimize efficiency losses and provide sustainable energy benefits. LG VRF systems are engineered to save on the cost of ducts, distribution fans, water pumps and water piping. VRF systems have a lower life cycle cost of any system on the market today.

Why LG VRF?

The benefits are numerous; modern style, mirror units for interior designers, less piping for installers and energy efficiency for owners. LG has low sound levels, so units are quiet and can be installed where sound is an issue. LG manufactured inverter compressor optimizes system energy efficiency.

Inverter Technology

With a compressor optimized around the latest inverter technology, the LG Multi V S Tropical system precisely matches the load. This helps prevent constant cycling and results in tight temperature control, superior dehumidification, and optimized efficiency. Occupants stay comfortable while reducing utility costs.

Multi V S Tropical Technology

This product line is LG's premiere VRF system. Multi V S Tropical is designed to provide the owner the benefits of VRF - lower operational costs, minimal or no duct work to install, tenant comfort with individual zoning, efficiency superior to other technologies — while maintaining architectural integrity. The benefit of zoning for heating or cooling is that it provides a level of comfort for all occupants.

PRODUCT LINE-UP

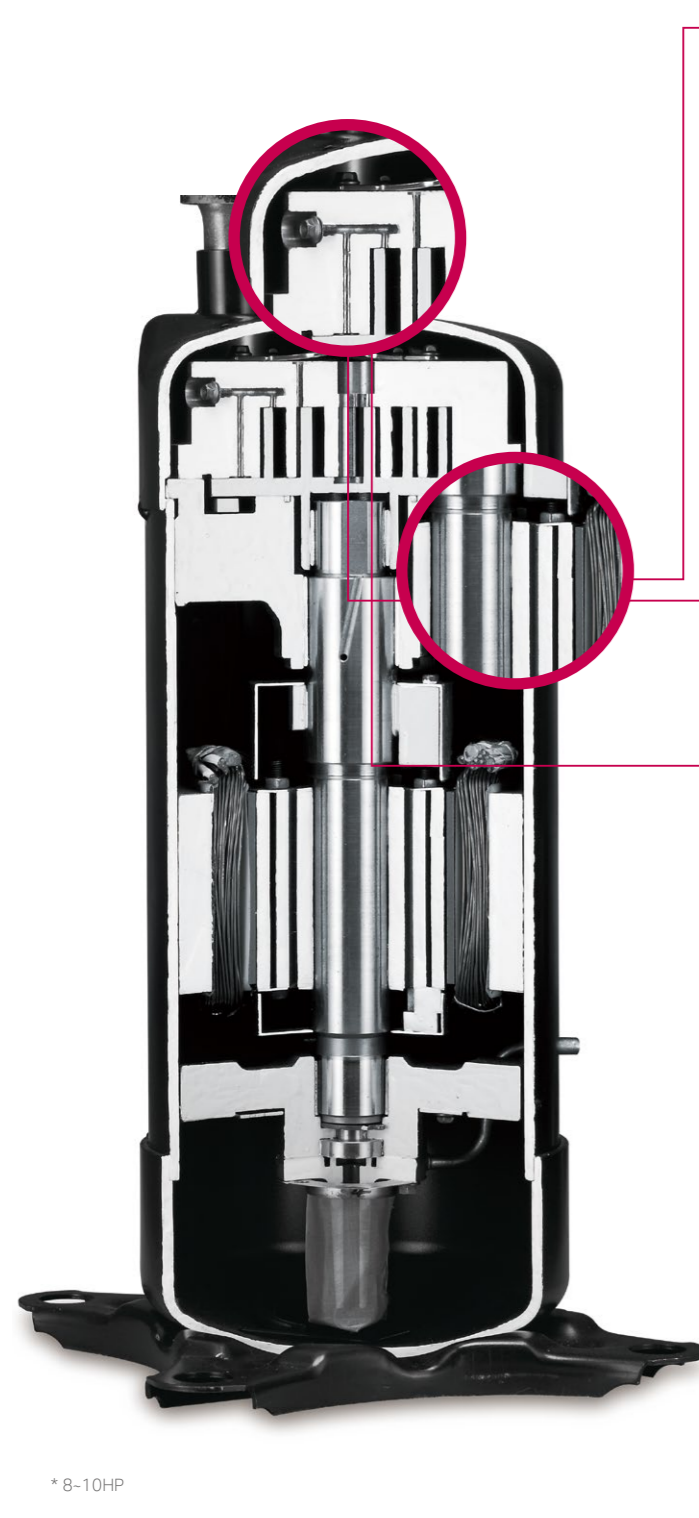
HP	4	5	6	8	10
3-Phase 380V					
	ARUN040LSH0	ARUN050LSH0	ARUN060LSH0	ARUN080LSH0	ARUN100LSH0



EXCEPTIONAL EFFICIENCY

LG's 4th Generation Inverter Compressor

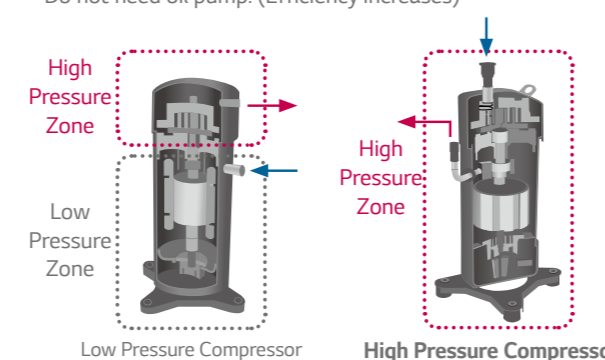
Multi V S Tropical has high efficiency inverter scroll compressor with frequency range 15Hz~150Hz.



- World Best Compressor Speed 150Hz**
 - Rapid response capability
 - Compact core design (concentrated motor)
 - Down to 15Hz : part load efficiency improvement
- Inverter Scroll Compressor**
 - Inverter SCROLL compressor of high efficiency
 - Low vibration / Low noise
- 6 By-pass Valve**

Compressor reliability is maximized with 6 By-pass Valve

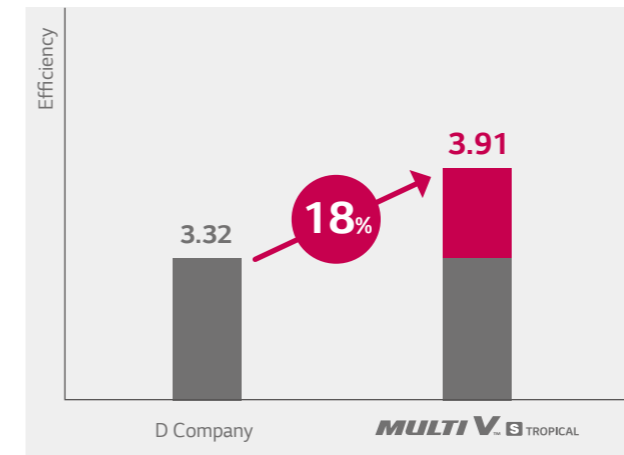
 - Prevent compressor damage due to excessively compressed refrigerant more efficiently than 4 by-pass valve
- High Pressure Compressor**
 - Viscosity of oil is secured due to high temperature and pressure.
 - Do not need oil pump. (Efficiency Increases)



* 8-10HP

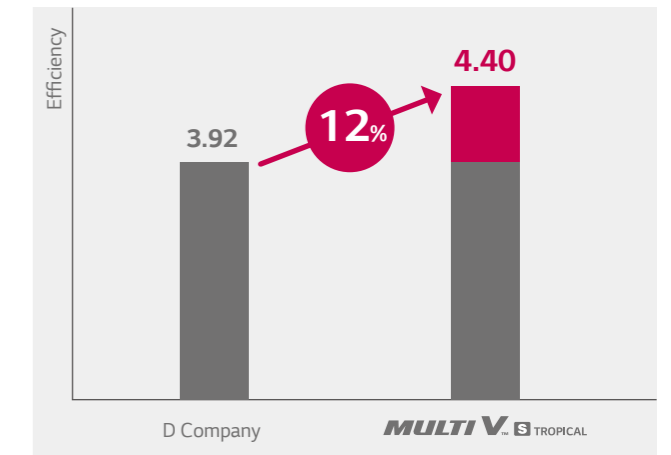
High Efficiency

EER (Cooling)



* Comparison between 6HP in cooling mode

COP (Heating)

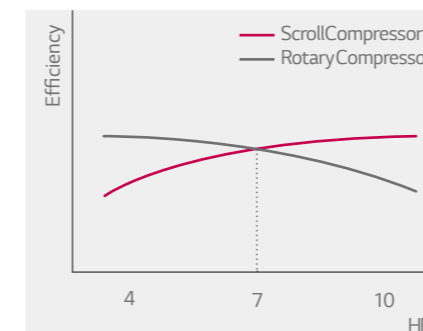


* Comparison between 6HP in heating mode

Reliable Inverter Compressor

Multi V S Tropical Inverter compressors are highly efficient and reliable for all commercial & residential applications.

Compressor Efficiency Comparison



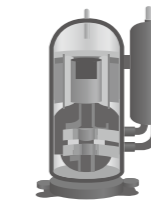
* Based on internal test data

T Company

Only suitable for small capacity below 7 HP



Only Rotary



MULTI V S TROPICAL

High reliability and efficiency at all capacity

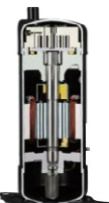
- Below 7 HP : Rotary compressor
- Upper 7 HP : Scroll compressor



Rotary



Scroll



EXCEPTIONAL EFFICIENCY

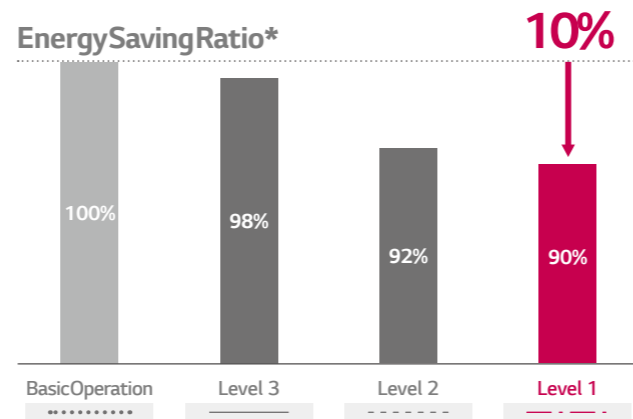
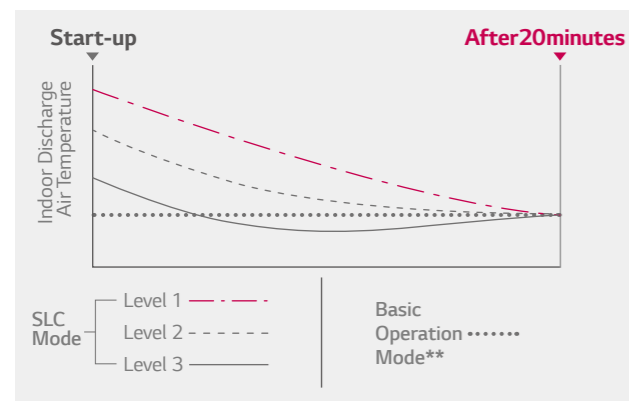
Smart Load Control

To save energy, Multi V S Tropical changes indoor discharge air temperature continuously according to load.



Start-up Operation

Operates for 20 minutes after Start-up. 3 levels of SLC operation can be set to save energy. (if not, can run in Basic Operation mode)



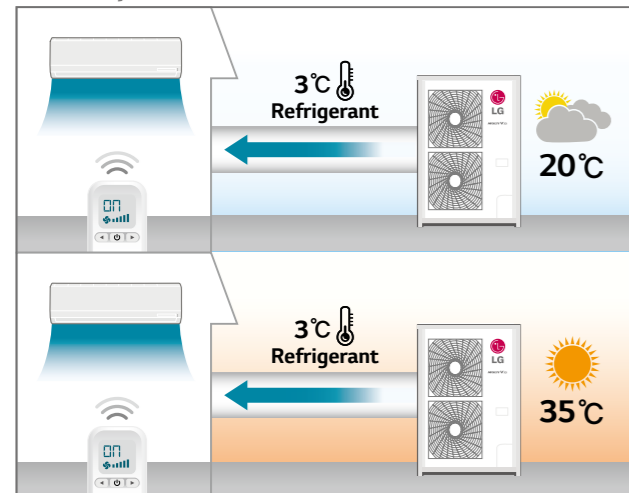
*Energy Saving Ratio : Ratio of energy saved, compared to 100% power consumption for 30 minutes (LG internal test result)

**Basic Operation Mode : Indoor discharge air temperature is constant regardless of variable heat load, so operating efficiency is not relatively high

Auto-reactive Operation

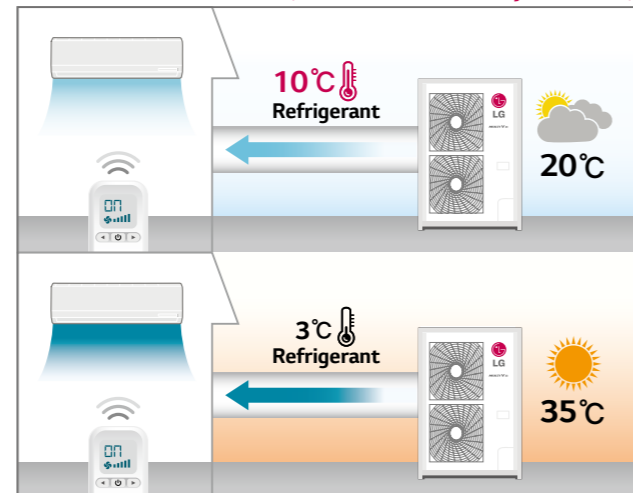
Automatically changes discharge air temperature according to the simultaneous loads. (OAT, IAT & Target temp.)

Basic Operation



- Variable : Indoor Air Temperature

Smart Load Control (Auto-reactive Operation)



- Variable : Indoor Air Temperature, Setting Temperature / Outdoor Air Temperature
- Accurate operation control considering various circumstances.

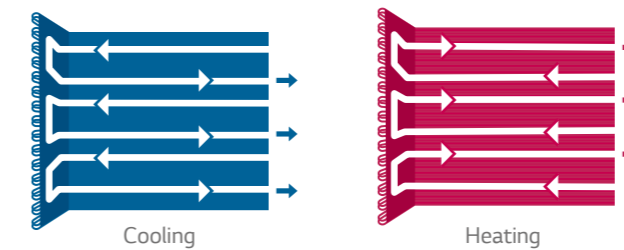
➡ **Maximum Energy Saving 13%**

Optimal Heat Exchanger Circuit

Variable Heat Exchanger Circuit is the world first technology which intelligently selects the optimal path for both heating and cooling (Efficiency up to 5%).

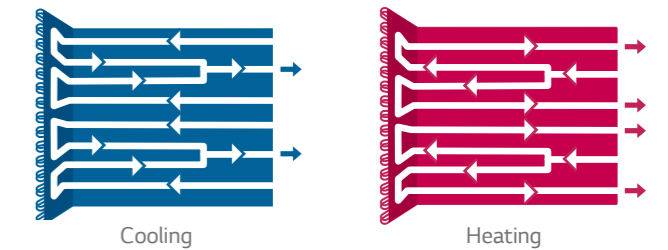
Conventional

The number and direction of path are fixed independent of temperature and operation mode. A fixed path limits efficiency.

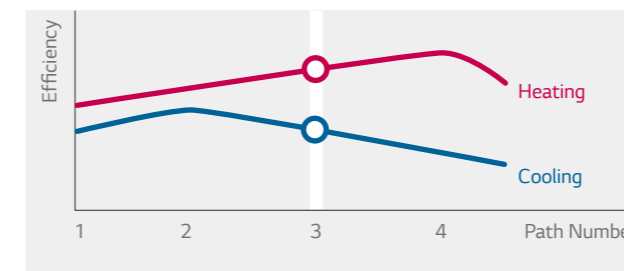


MULTI V S TROPICAL

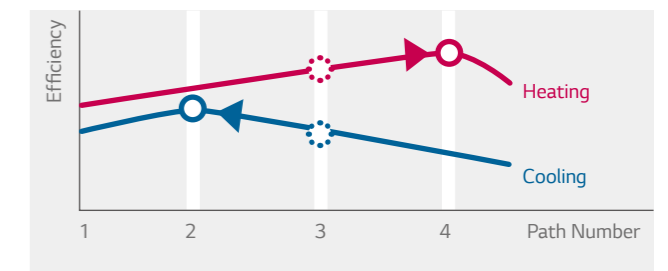
Variable Heat Exchanger Circuit adjusts the path number to match temperatures and operation modes, thereby contributing to an increase in energy efficiency.



Compromising efficiency for each operation

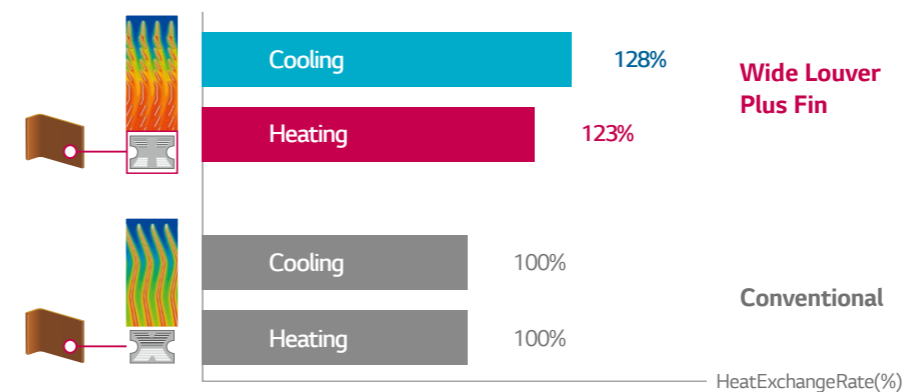


Maximizing efficiency for all operations

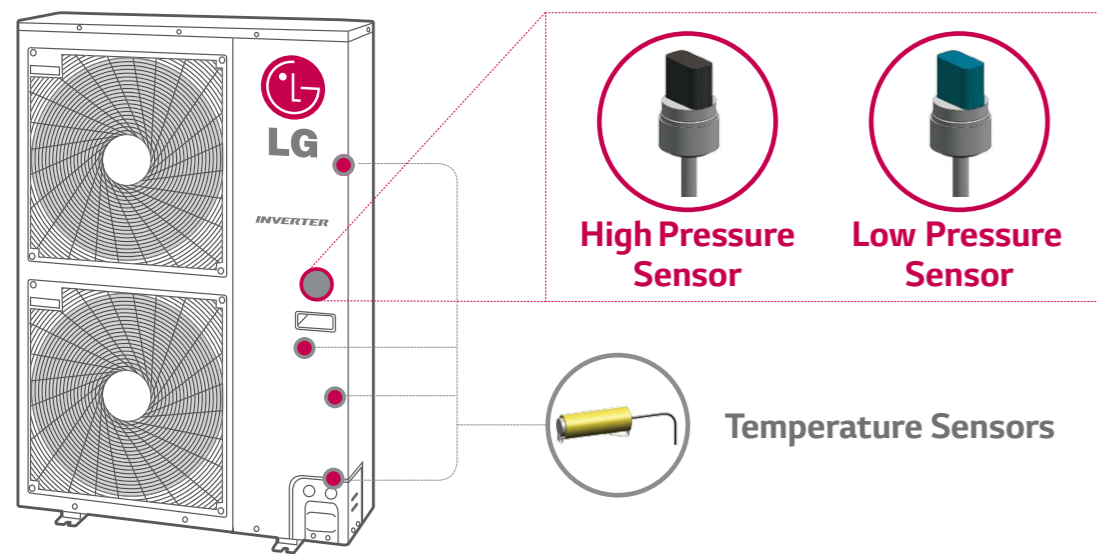


Heat Exchanger with Wide Louver Plus Fin

Improved heat exchanger efficiency of up to 28%

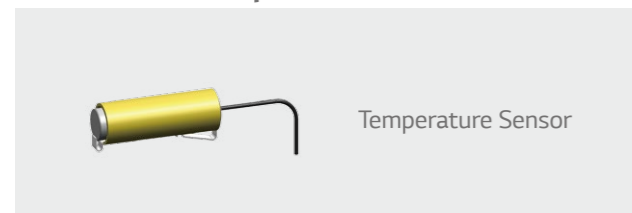


HIGH OPERATION RELIABILITY



High Reliability with Pressure Control

Conventional Temperature Control



Calculates target pressure according to indoor/outdoor temperature, desired temperature and piping length.

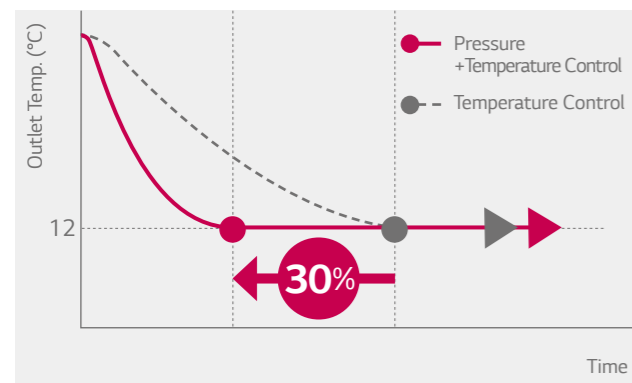
Temperature + Pressure Control



Senses and controls pressure directly using pressure sensor for faster and more exact response to load variation

Quick Operating Response

Pressure control takes up to 30% less time in cooling mode, to reach the desired temperature.



30% Quicker

The indoor environment can be made more comfortable, faster and more accurately.

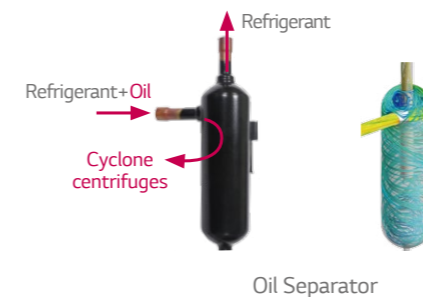
*Based on internal test data

High Reliability of Refrigerant Cycle

Multi V S Tropical improved reliability through an excellent technique of Oil separator / Accumulator / Sub-cooling.

1. Cyclone Centrifuges Oil Separator

- Highly reliable and efficient oil separation by centrifugal separation using cyclone methods
- High collection efficiency as well as outstanding resistance to high temperature and pressure



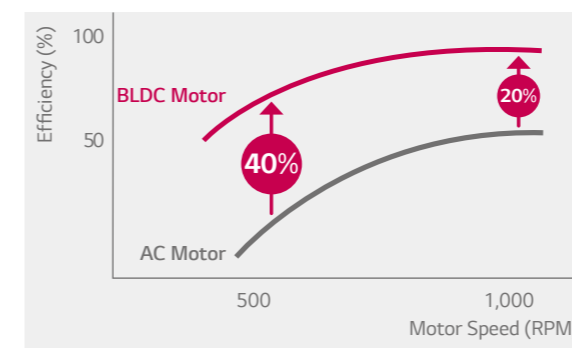
2. Large Volume Accumulator

- Improved reliability by adopting the large volume accumulator (138% volume up compared to conventional)
- Prevents the liquid refrigerant entering the compressor suction



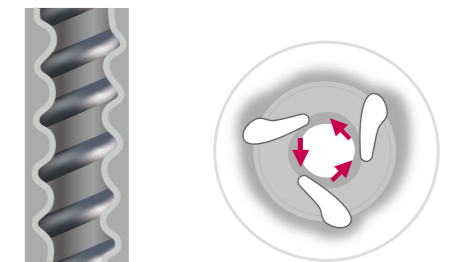
3. BLDC Fan Motor

- The BLDC Fan motor is more efficient than a conventional AC motor, offering an additional 40% energy savings at low speeds and 20% at high speeds.



4. Double Sub-cool Interchanger

- Reliability is enhanced by minimizing pressure drop due to high efficiency spiral structure and 2 times larger size
- > Long pipe is possible (up to 175 m) and high elevation (up to 50 m)
- > Reduction of indoor refrigerant noise level



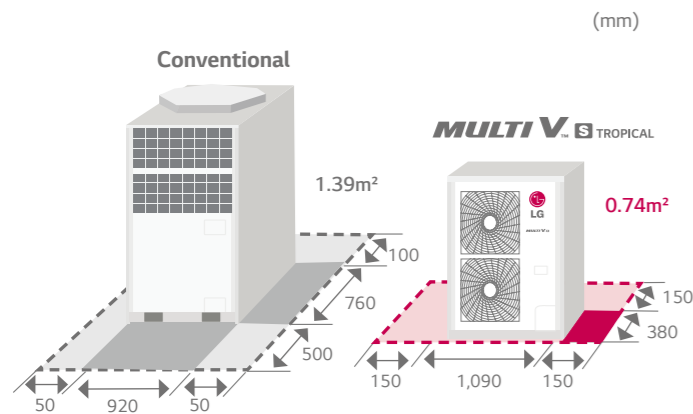
Double Sub-cool Interchanger

DESIGN WITHOUT LIMIT

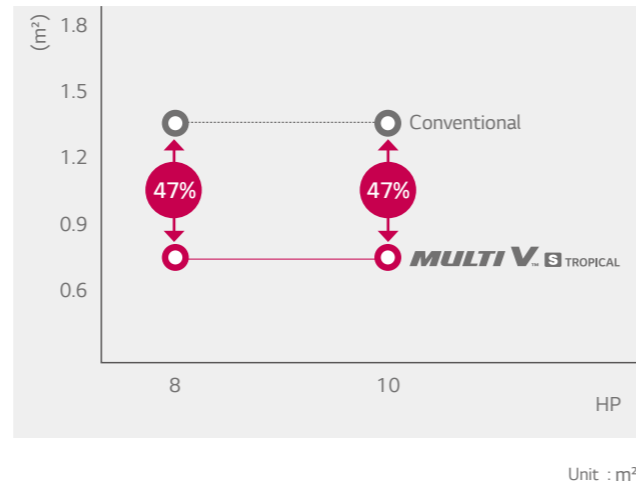
Compact Design

Multi V S Tropical provides the optimal solution for small offices and shops.

Footprint Area Comparison Including Service Area



* 8HP model comparison

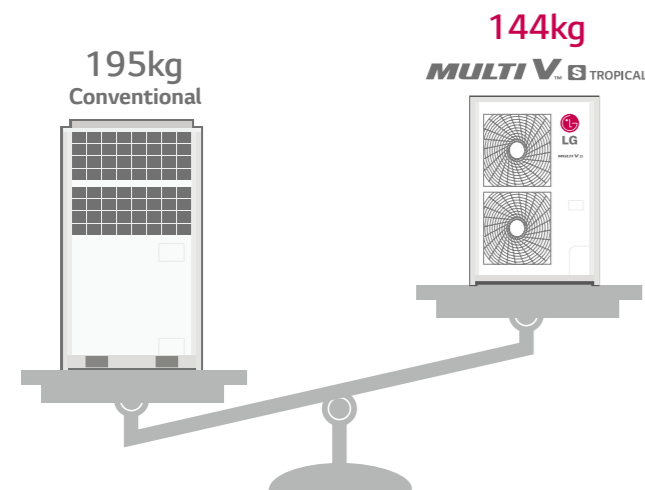


Footprint Area	HP	4	5	6	8	10
MULTI V S TROPICAL		0.60	0.60	0.60	0.74	0.74
Conventional		-	-	-	1.39	1.39

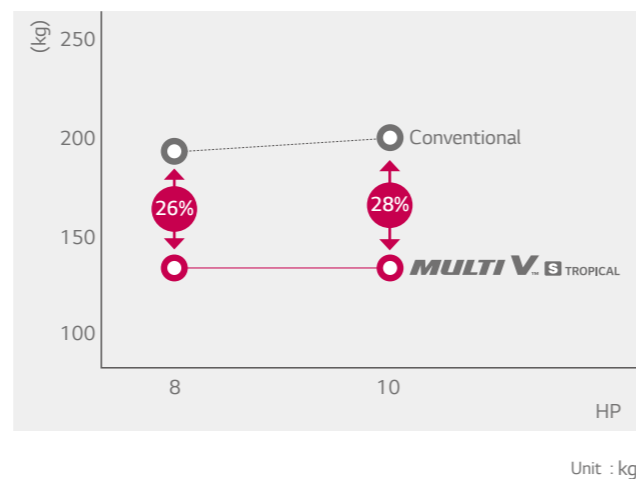
* Source : Data Book

26% Lighter weight than conventional model.

- Less pressure on the roof
- Easier installation



* 8HP model comparison



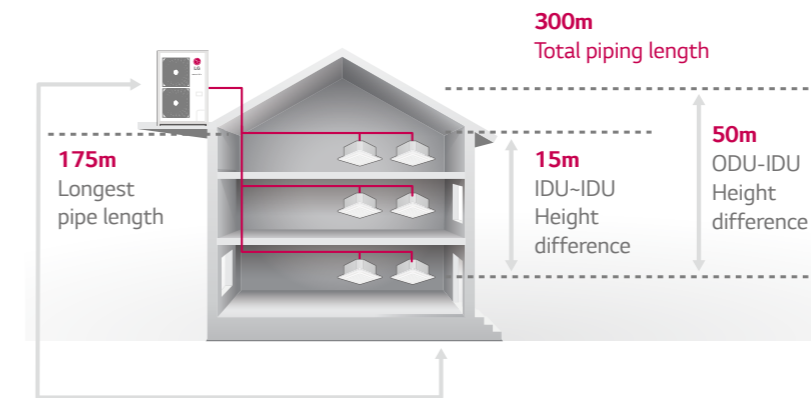
Weight	HP	4	5	6	8	10
MULTI V S TROPICAL		96	96	96	144	144
Conventional		-	-	-	195	201

* Source : Data Book

Expanded Piping Capabilities

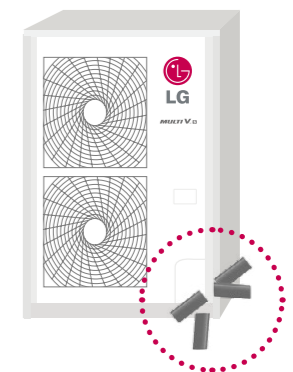
Multi V S Tropical inverter technology and sub cooling control circuit technology allows greater piping length and outstanding elevation differences. A cooling system can be implemented more flexibly in a shop, office and even high-rise building, reducing the designer's work time and providing more efficient design.

Piping Capabilities



4 Way Piping

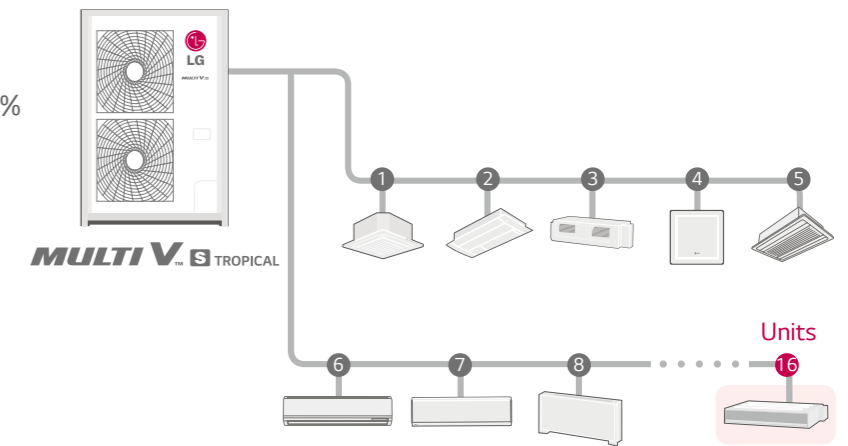
- Free design and installation by 4 way piping.



Max. 16 Indoor Units Connectable (Based on 10HP)

Maximum of 16 units can be connected to a single outdoor unit with 130% indoor unit combination. (Based on 10HP)

- Connectable indoor units is up to 16 units maximum.
- Indoor units combination range : 50 ~ 130%
- 4HP : Max. 6 indoor units
- 5HP : Max. 8 indoor units
- 6HP : Max. 9 indoor units
- 8HP : Max. 13 indoor units
- 10HP : Max. 16 indoor units



* Based on 10HP model

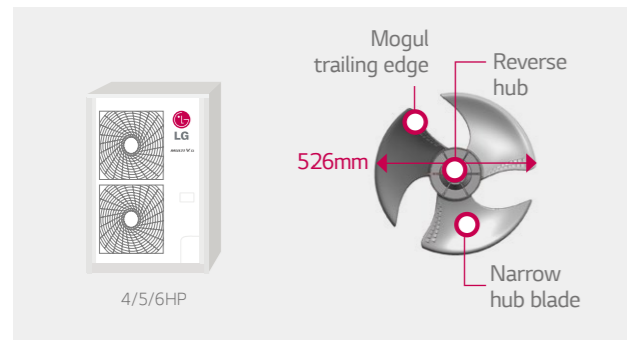
OUTSTANDING PERFORMANCE

Fan Technology and E.S.P. Control

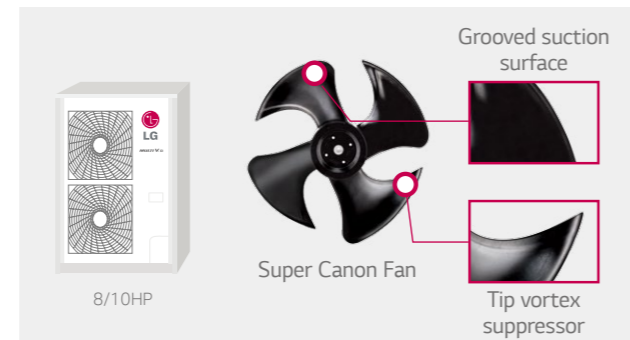
For efficient operation, newly developed fan blows higher air volume and has more high static pressure, also operating noise is decreased.

Fan Technology

The new axial fan has a mogul trailing edge, narrow hub blade and reverse hub, this provides a high efficiency, low noise, wide fan, as well as improving the air flow rate.

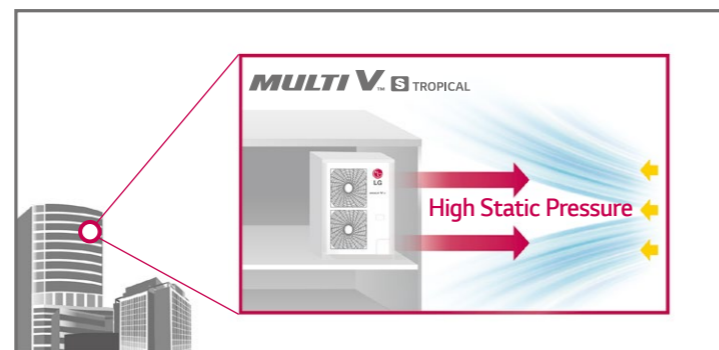
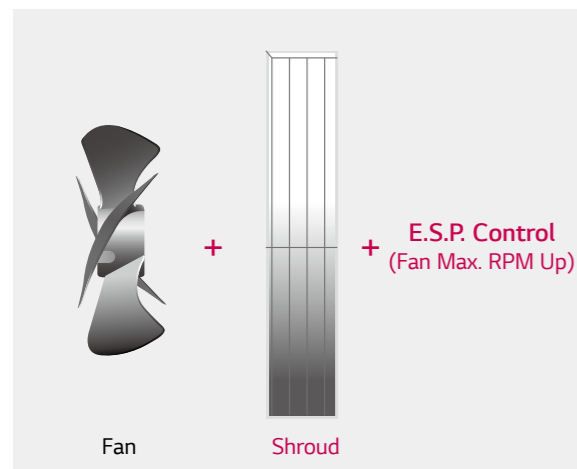


Super cannon fan increases the air volume in 50 CMM and the noise level is decreased by 4 dB(A).



High E.S.P. Technology

Flow of air has straightness due to fan shroud and E.S.P. control even in high-rise building.



- Straight air flow
- New shroud adopted
- Performs high static pressure

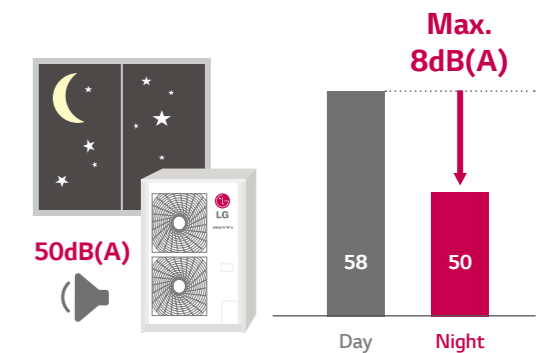
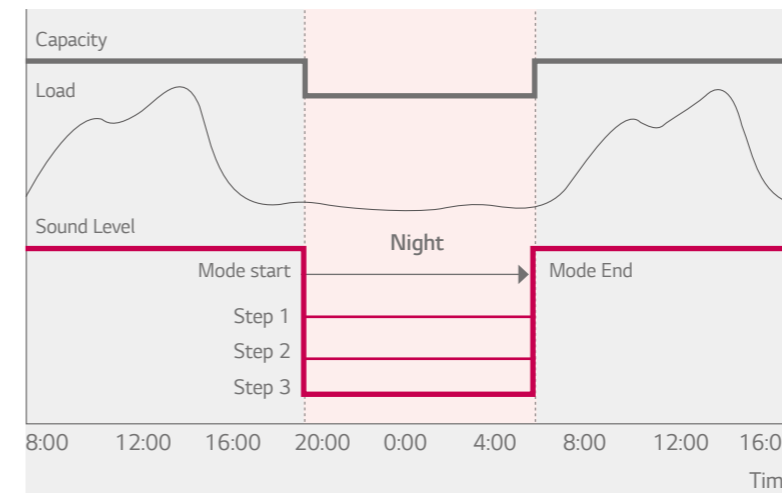
* E.S.P. : External Static Pressure

Silence

Low noise operation at night is possible thanks to inverter technology.

Night Silent Operation

At night mode, noise reduced maximum 14% compared to normal mode.

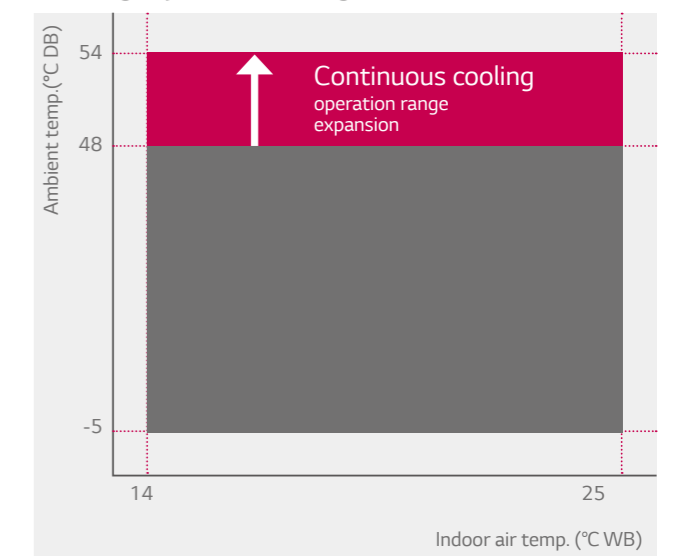


* Normal mode noise level (10HP) : 58dB(A)
* Night 3 step noise level (10HP) : 56dB(A), 53dB(A), 50dB(A)

Wide Operation Range

Thanks in large part to LG's advanced inverter compressor and unique heat exchanger design, Multi V S Tropical is able to provide reliable operation even when the outside temperature soars to 48°C, exceeding the previous norm limit by 6 degrees.

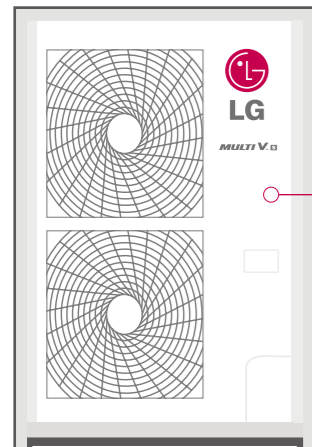
Cooling Operation Range



CYCLE & SERVICE OPTIMIZATION

Upgraded Fault Detection and Diagnosis

The inclusion of FDD elements - Auto start-up, auto refrigerant check, black box functionality, simultaneous evaluation, and auto refrigerant collection, provides the optimal solution for user reliability and ease of maintenance.



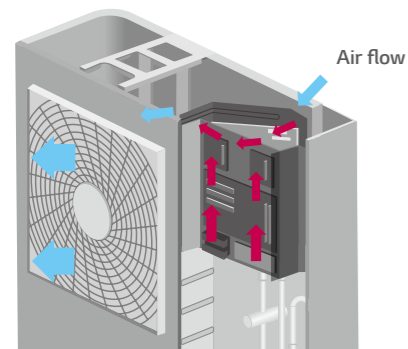
- Auto commissioning Mode
- Auto Refrigerant Collection
- Auto evaluation of refrigerant amount and charging
- Able to access LGMV (LG Monitoring View) by smartphone
- Black box function
- Piping & wiring error check-up

Self Cooled Control

Multi V S Tropical has heat exchanger structure and diagonal shape of control box.(Efficiency up to 3%)

Control Box Cooling System

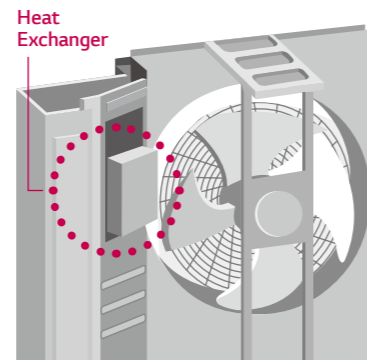
- Feature of control box is diagonal shape, it makes naturally air flowing(directly pulling air back of the fan)
- Reduced heating / cooling efficiency loss



Front view

Heat Exchanger Technology

- Heat exchanger structure
- Optimal air flow by aluminum heat exchanger on control box.



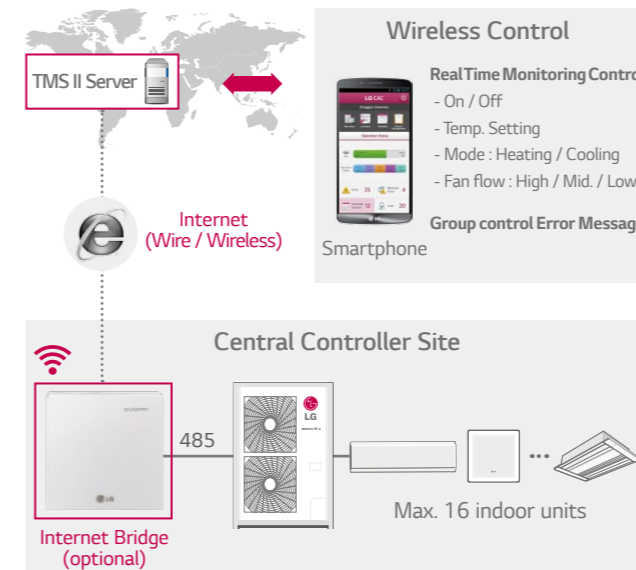
Rear view

Smartphone Control

With mobile application it is convenient to manage various indoor units.

Wireless Control (Optional)

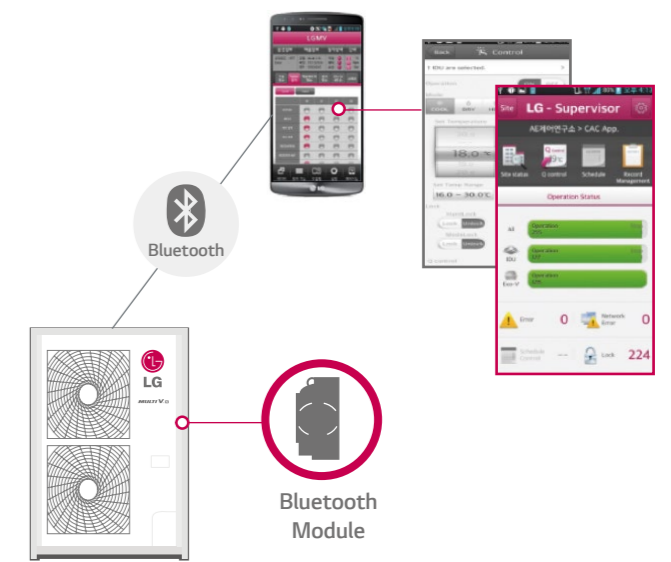
Easy control & monitoring through internet



* In order to use this application, please do legal review (gathering private information) and get the wireless standard in each country. (Internet Bridge requires additional charges)

Smartphone based LGMV (Optional)

Cycle monitoring and control

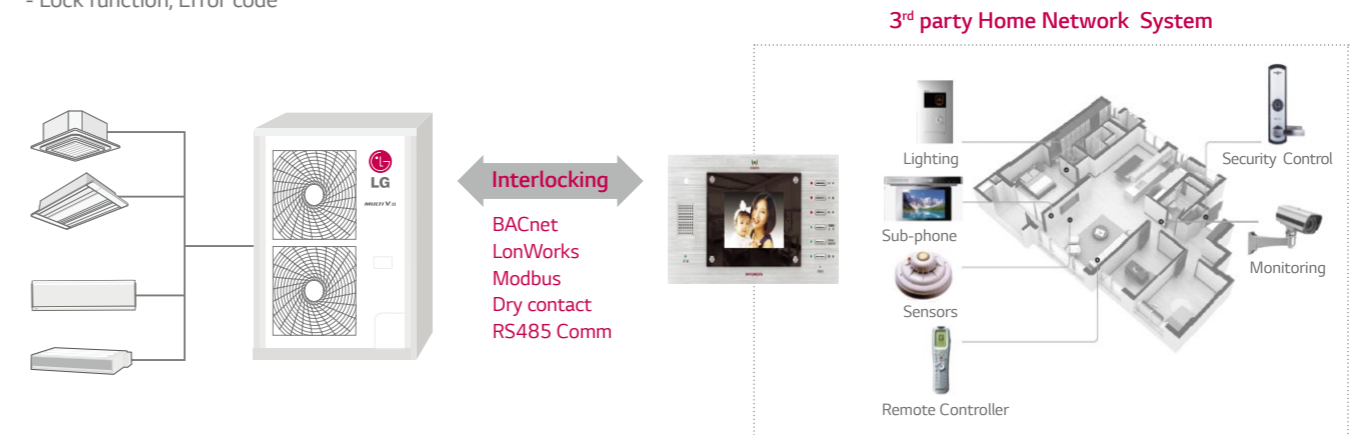


Interlocking with Home Network System

Interlocking with home network system enables various application. Depending on building size and usage, various communication method can be given.

Compatibility to Home Network System

- Basic control (On/Off, Mode, Setting Temp, Fan speed)
- Lock function, Error code



4,5,6 HP



HP			4	5	6
Model Name	Combination Unit		ARUN040LSHO	ARUN050LSHO	ARUN060LSHO
Capacity (Rated) ¹⁾	*Cooling	RT	3.2	4.0	4.4
		kW	11.2	14	15.5
		Btu/h	38,200	47,800	52,900
	**Cooling	RT	2.7	3.4	3.8
		kW	9.5	11.9	13.2
		Btu/h	32,400	40,600	45,000
Heating	RT	3.6	4.5	5.1	
	kW	12.5	16.0	18.0	
Input (Rated) ¹⁾	*Cooling	kW	2.60	3.38	3.96
		Btu/h	42,700	54,600	61,400
	**Cooling	kW	2.80	3.66	4.26
		Btu/h	2.75	3.52	4.09
	Heating	kW	2.75	3.52	4.09
		Btu/h	4.55	4.55	4.40
COP ¹⁾	*Cooling	kW / kW	4.31	4.14	3.91
	**Cooling	kW / kW	3.40	3.25	3.10
	Heating	kW / kW	4.55	4.55	4.40
Power Factor	Rated	-	0.93	0.93	0.93
Casing Color			Warm Gray	Warm Gray	Warm Gray
Heat Exchanger			Gold fin	Gold fin	Gold fin
Compressor	Type		DC Inverter Rotary	DC Inverter Rotary	DC Inverter Rotary
	Piston Displacement	cm ³ /rev	44,2	44,2	44,2
	Number of Revolution	rev/min	3,600	3,600	3,600
	Motor Output x Number	W x No.	4,000 x 1	4,000 x 1	4,000 x 1
	Starting Method		Inverter	Inverter	Inverter
	Oil Type		FVC68D(PVE)	FVC68D(PVE)	FVC68D(PVE)
Fan	Type		Propeller fan	Propeller fan	Propeller fan
	Motor Output x Number	W	124 x 2	124 x 2	124 x 2
	Air Flow Rate	m ³ /min	110	110	110
		ft ³ /min	3,885	3,885	3,885.000
	Drive		DC INVERTER	DC INVERTER	DC INVERTER
	Discharge	Side / Top	Side	Side	Side
Piping Connections	Liquid	mm(inch)	Ø 9.52(3/8)	Ø 9.52(3/8)	Ø 9.52(3/8)
	Gas	mm(inch)	Ø 15.88(5/8)	Ø 15.88(5/8)	Ø 19.05(3/4)
Dimensions (W x H x D)		mm	(950x1380x330)	(950x1380x330)	(950x1,380x330)
		inch	(37.4 x 54.3 x 13.0)	(37.4 x 54.3 x 13.0)	(37.4 x 54.3 x 13.0)
Net Weight		kg	96	96	96
		lbs	212	212	212
Sound Press Level	Cooling	dB(A)	50.0	51.0	50.0
	Heating	dB(A)	52.0	53.0	52.0
Sound Power Level		dB(A)	63	66	63
Protection Devices	High pressure protection	-	High pressure sensor		
	Compressor/ Fan	-	Over-heat protection / Fan driver overload protector		
	Inverter	-	Over-heat protection / Over-current protection		
Communication Cable	No.xmm ² (VCTF-SB)		2C x 1.0 ~ 1.5	2C x 1.0 ~ 1.5	2C x 1.0 ~ 1.5
Refrigerant	Refrigerant name		R410A	R410A	R410A
	Precharged Amount	kg	3.0	3.0	3.0
		lbs	6.6	6.6	6.6
	Control		Electronic Expansion Valve		
Power Supply	V, Ø, Hz		380-415, 3, 50	380-415, 3, 50	380-415, 3, 50
	V, Ø, Hz		380, 3, 60	380, 3, 60	380, 3, 60
Number of maximum connectable indoor units ²⁾			6	8	9

8,10 HP



HP			8	10
Model Name	Combination Unit		ARUN080LSHO	ARUN100LSHO
Capacity (Rated) ¹⁾	*Cooling	RT	6.4	8.0
		kW	22.4	28
		Btu/h	76,400	95,900
	**Cooling	RT	5.4	7.1
		kW	19.0	25.0
		Btu/h	64,900	85,300
Heating	RT	7.2	9.0	
	kW	25.2	31.5	
Input (Rated) ¹⁾	*Cooling	kW	5.60	7.09
		Btu/h	86,000	107,500
	**Cooling	kW	5.94	7.94
		Btu/h	5.86	7.41
	Heating	kW	5.86	7.41
		Btu/h	4.30	4.25
COP ¹⁾	*Cooling	kW / kW	4.00	3.95
	**Cooling	kW / kW	3.20	3.15
	Heating	kW / kW	4.30	4.25
Power Factor	Rated	-	0.93	0.93
Casing Color			Warm Gray	Warm Gray
Heat Exchanger			Gold fin	Gold fin
Compressor	Type		DC Inverter Rotary	DC Inverter Rotary
	Piston Displacement	cm ³ /rev	62.1	62.1
	Number of Revolution	rev/min	3,600	3,600
	Motor Output x Number	W x No.	5,300 x 1	5,300 x 1
	Starting Method		Inverter	Inverter
	Oil Type		FVC68D(PVE)	FVC68D(PVE)
Fan	Type		Propeller fan	Propeller fan
	Motor Output x Number	W	250 x 2	251 x 2
	Air Flow Rate	m ³ /min	190	190
		ft ³ /min	6,707.000	6,707.000
	Drive		DC INVERTER	DC INVERTER
	Discharge	Side / Top	Side	Side
Piping Connections	Liquid	mm(inch)	Ø 9.52(3/8)	Ø 9.52(3/8)
	Gas	mm(inch)	Ø 19.05(3/4)	Ø 22.2(7/8)
Dimensions (W x H x D)		mm	(1,090 x 1,625 x 380)	(1,090 x 1,625 x 380)
		inch	(42.9 x 64.0 x 15.0)	(42.9 x 64.0 x 15.0)
Net Weight		kg	144	144
		lbs	317	317
Sound Press Level	Cooling	dB(A)	57.0	58.0
	Heating	dB(A)	57.0	58.0
Sound Power Level		dB(A)	68	69
Protection Devices	High pressure protection	-	High pressure sensor	
	Compressor/ Fan	-	Over-heat protection / Fan driver overload protector	
	Inverter	-	Over-heat protection / Over-current protection	
Communication Cable	No.xmm ² (VCTF-SB)		2C x 1.0 ~ 1.5	2C x 1.0 ~ 1.5
Refrigerant	Refrigerant name		R410A	R410A
	Precharged Amount	kg	4.5	4.5
		lbs	9.9	9.9
	Control		Electronic Expansion Valve	
Power Supply	V, Ø, Hz		380-415, 3, 50	380-415, 3, 50
	V, Ø, Hz		380, 3, 60	380, 3, 60
Number of maximum connectable indoor units ²⁾			13	16

Device	Buyer Model	ARUN040LSHO, ARUN050LSHO, ARUN060LSHO, ARUN080LSHO, ARUN100LSHO
AC Ez (Simple Controller)	PQCSZ250S0	0
AC Smart II	PQCSW320A1E	0
AC Smart Premium	PQCSW421E0A	0
128 Unit Expansion Kit for AC Smart	PQCSE440U0	0
Option Kit (SD card type) for AC Smart	PQCSE341A0 / PQCSE342A0	0
ACP(Advanced Control Platform)	PQCPA11A0E / PQCPB11A0E	0
AC Manager	PQCSS520A0E	0
ACP(Advanced Control Platform) Standard	PQCPC22N0	0
ACP(Advanced Control Platform) Premium	PQCPC22A0	0
AC Manager Plus	PQCSSA21E0	0
DO(Digital Output) Kit	PQNFP00T0	0
LONWORKS Gateway (DC 12V Adapter)	PQNFB16A1 / PLNWKB000	0
BNU (Building Network Unit) LONWORKS Gateway (AC 24 V)	PLNWKB100	0
BACnet Gateway (DC 12V Adapter)	PQNFB17B0 / PQNFB17C0	0
BACnet Gateway (AC 24 V)	PQNFB17C1	0
Installation Refrigerant Charging Kit	PRAC1	0
PDI(power distribution indicator)	PQNUD1S00	0
PDI(power distribution indicator) Premium	PQNUD1S40	0
Cool / Heat Selector	PRDSBM	0
IO Module (ODU Dry Contact)	PVDSMN000	0
Low Ambient Kit	PRVC*	X
CycleMonitoringDevice LG MV	PRCTILO	0
Mobile LGMV(Bluetooth)	PMVBTQ01	0
Internet Bridge	PWFMD000	0

Notes:

- Capacities are based on the following conditions:
 - *Cooling : Indoor Temperature 27°C(80.6°F) DB/19°C(66.2°F) WB
Outdoor Temperature 35°C(95°F) DB/24°C(75.2°F) WB
 - **Cooling : Indoor Temperature 27°C(80.6°F) DB/19°C(66.2°F) WB
Outdoor Temperature 46°C(114.8°F) DB/24°C(75.2°F) WB
 - Heating Temperature : Indoor 20°C(68°F) DB / 15°C(59°F) WB
Outdoor 7°C(44.6°F) DB / 6°C(42.8°F) WB
 - Piping Length : Interconnected Pipe Length = 7.5m
 - Difference Limit of Elevation (Outdoor ~ Indoor Unit) is Zero.
- The Maximum combination ratio is 130%.
- Wiring cable size must comply with the applicable local and national codes.
And "Electric characteristics" chapter should be considered for electrical work and design.
Especially the power cable and circuit breaker should be selected in accordance with that.
- Due to our policy of innovation some specifications may be changed without notification.
- Sound Level Values are measured at Anechoic chamber.
Therefore, these values can be increased owing to ambient conditions during operation.
- Power factor could vary less than ±1% according to the operating conditions.