

LG

HVAC

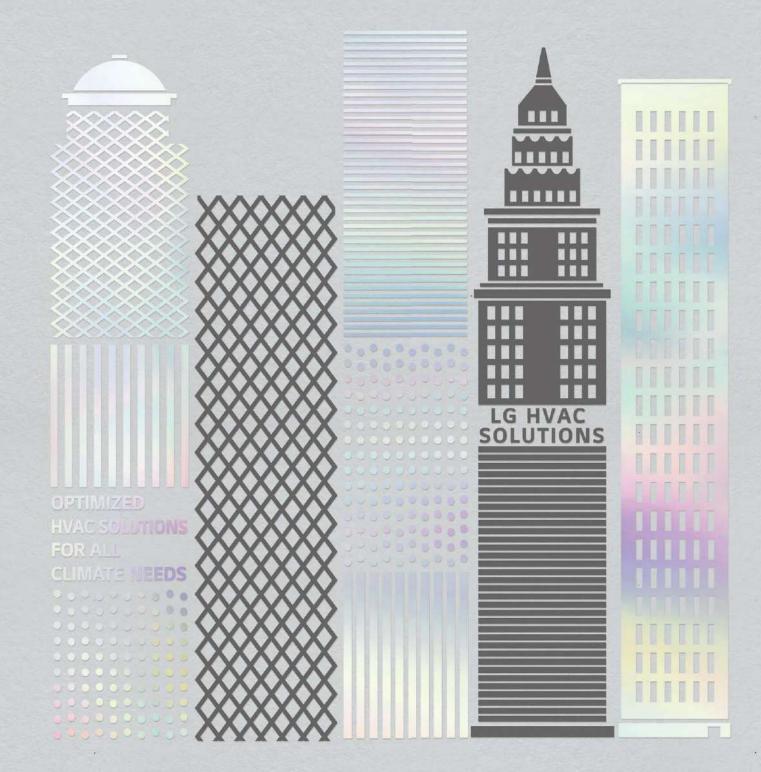
SOLUTION GUIDE

LG ELECTRONICS

Life's Good

LG ELECTRONICS

LG HVAC SOLUTION GUIDE





LG Electronics

http://www.lg.com http://partner.lge.com



LETTER FROM VICE PRESIDENT

LG ELECTRONICS AIR SOLUTION COMPANY GLOBAL SYSTEM AIR CONDITIONING SALES & MARKETING DIVISION

At LG Electronics Inc., one of our primary goals is to help foster the success of our business partners. This year, we thought about what we could introduce to our existing toolkit that could be a true comprehensive guide to our business and how we can help our customers.

I would like to present [insert document title here], which can be used as an overview to our 360° business solution.

Firstly, we would like to ensure our customers are fully aware of the range of tools at their disposal, from marketing communications to detailed product information through our various online portals and applications.

We also hope to highlight our on-the-ground availability to our partners, with local LG offices as well as certified distribution channels and installation capabilities across Europe.

The LG Electronics' R&D center continues to strive for excellent innovations to contribute to our diverse product portfolio that has been established to meet the ever-changing requirements of our loyal and prospective customers.

Our collective vision is to extend our company value proposition from simply being a product manufacturer to a complete solution provider with flexible and customizable products that provide comfort, efficiency, convenience and more with world-class building management and home connectivity systems to both our business partners and our end-users.

With our engineering support systems, we also intend to support our partners with concrete simulations and analysis throughout the lifecycle of a project and beyond.

Furthermore, with an eye toward the future as our long-standing business model, we want to ensure that our spirit of innovation is sustainable and future-proof to play our part toward a more eco-conscious solution.

We hope this guide clearly summarizes the comprehensive offering we at LG Air Solution hope is a positive contribution to the future outlook of our valued partners.

Sincerely,

Hank Choi

Vice President, LG Electronics Air Solution Company Air Solution America/Europe/CIS Sales & Marketing Division BRAN

BUSINES

ENGINEERING ONLINE L



BRAND

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THE HISTORY OF LG ELECTRONICS





1958

• Establishes Gold Star (now LG Electronics)

1968

• Produces Korea's first air conditioner

1985

• Produces Korea's first inverter air conditioner

1990

• Produces in-house rotary compressors

1995

• Rebrands company as LG Electronics

1998

• Produces Korea's first system air conditioner

2000

• Ranked No. 1 worldwide in Air Conditioner sales

2001

• Produces world's first frame-type air conditioner

2004

• Sells over 10 million units of the frame-type air conditioners

2007

• Ranked No. 1 worldwide in Air Conditioner sales

2008

• World's first frame-type Air Conditioner Produced (over 10 million units)

2010

• LG Electronics envisions to become the world leaders in providing **HVAC & Energy Solutions**

2011

• Launches comprehensive air conditioning capabilities - ranging from compact to large air conditioners by LS Mitron / BMS business

2014

• Launches a new brand "BECON" as a total Energy Solution provider

2015

• Produces in-house GHP 30HP

2017

• Produces Multi V Super 5

2018

• Produces Single and Multi R32 products

006 I 007

TOTAL HVAC & ENERGY SOLUTION PROVIDER

BUSINESS AREA



Total HVAC & Energy Solution Provider

Expansion of the air-conditioning and energy businesses is the major growth driver of our air solution division.







Integration

Providing integrated HVAC solutions to improve energy efficiency in buildings [Integrator]

Expertise

Providing technical knowledge on the market know-how of our products and solutions to our customers [Expert Advisor]

Commitment

Responsible and dedicated support throughout the value chain of sales, installation and maintenance [Committed Partner]

Customer **Shared Value** • Efficient TCO

(Total cost of ownership)

• Connectivity & Seamless UX

• Technology Expert

• Thought Leader

Proactive Advisory

• Trusted Partner

• Long-term Companion

• Dedicated Listener

Core Value Attribute

Integration

Years of experience has led to a quick turnaround time of our integrated solutions

Expertise / Commitment

Strong technical expertis leading to a long-term customer experience Value to be prepared/executed from now on

Strategic Approach

Building omnichannel communication plan

Long-term investment in product development

3RD PARTY RECOGNITION

AWARDS & CERTIFICATIONS

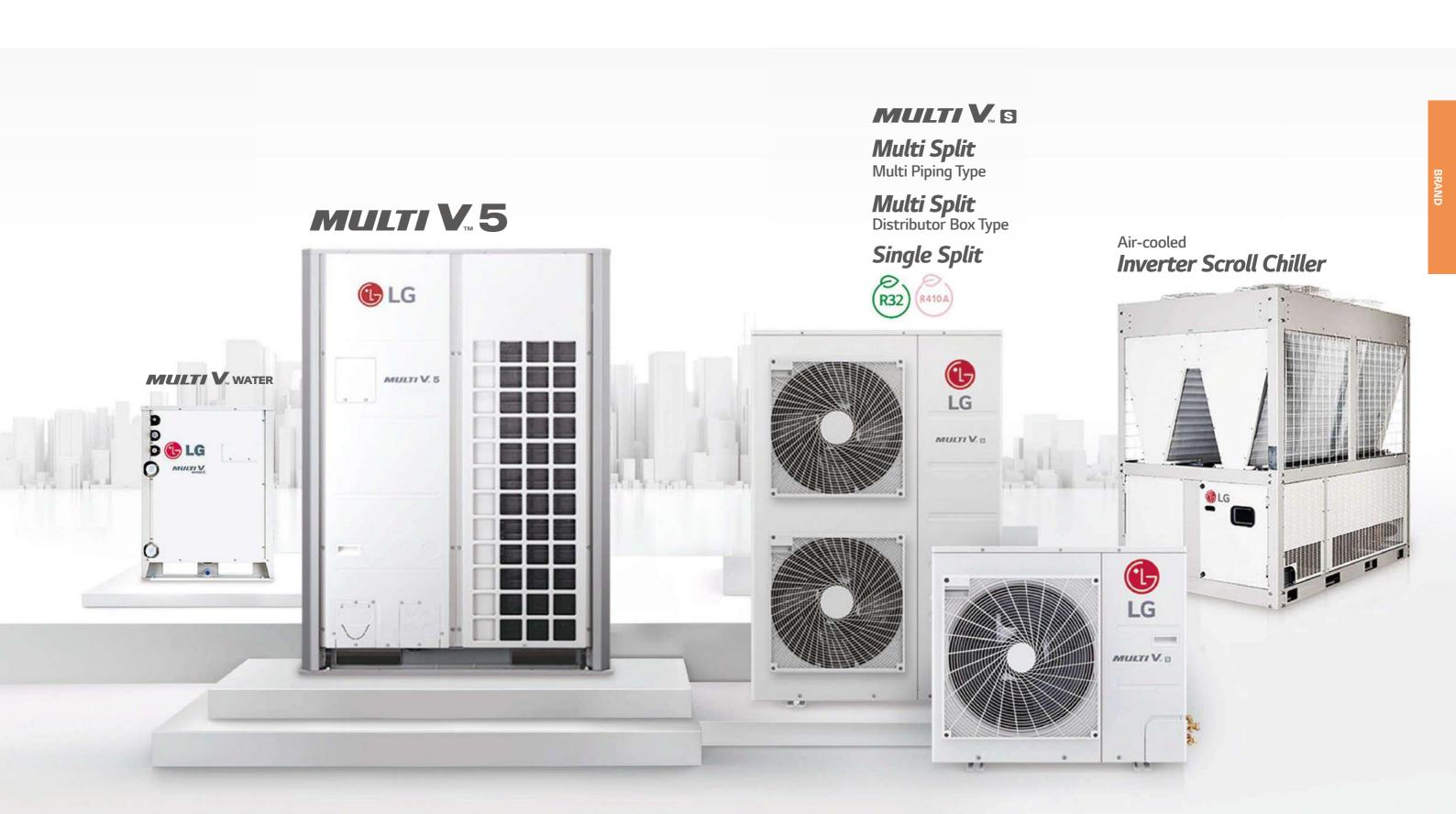


Certified by Global Party Organizations



AIR CONDITIONING (Outdoor Unit)





AIR CONDITIONING (Indoor Unit)





HEATING





• • • • •

Unit: HP



OUTDOOD UNITC LINE UD

OUTDOOR UNITS LINE-UP									
Features	Appearance 4	5	6	8	10 1	12 14	16	18	20
				•	•	•			
• Dual Sensing Control • Large capacity ODU (Up to 26HP)						•	•	•	•
Continuous Heating Black Fin heat exchanger Heat pump or heat recovery function Flexible installation with heat recovery unit and large capacity For large space, high rise building and									
individual Control building Multi V 5 : ARUM***LTE5									
<i>MULTI</i> V _™ s	0	0							
Space saving Flexible design applications Slim, light, and broad range (4 - 12 HP) Large number of connectable indoor units (Up to 20 Units)	•	0	0•						
For small / medium building Multi V S : ARUN***GSS0 / ARUN***LSS0	0: 0			•	•	•			
Heat Recovery Multi V S Heat recovery : ARUB***GSS4	0		0						
R32 Multi V S R32 : ZRUN***GSS0 / ZRUN***LSS0	••	0	0•						
 High flexibility of installation Quiet operation Various indoor unit combinations & long distance between modules Multi V M : ARUN***LMSO 		•							
MULTI V.				•	•	•			•
WATERIV Heat Pump / Heat Recovery High efficiency system regardless external conditions Indoor installation							•	•	
Low noise operation (No fan) For water-sourced system, high rise building and building with aesthetic requirements. Simultaneous cooling and heating Minimized energy cost by water sourced heat recovery system									
For individual Control building Multi V Water : ARWN***LAS4 / ARWB***LAS4									

● 380V, 3Ø ○ 220V, 1Ø 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80

• • • .

• • •

MULTI V_{TM}



INDOOR UNITS LINE-UP

		kW	1.5	2.2	2.8	3.6	4.5	5.6	6.2	7.1	8.2	9.0	10.6	12.3	14.1	15.8	22.4	28.0
Туре		Btu/h	5k	7k	9k	12k	15k	18k	21k	24k	28k	30k	36k	42k	48k	54k	76k	961
Wall	Artcool Gallery ARNU**GSF14			•	•	•												
Mounted	Standard ARNU**GSJC4/ARNU**GSKC4/A	RNU**GSVA4	•	•	•	•	•	•		•		•	•					
	4 Way Cassette (570 x 570) ARNU**GTRB4/ARNU**GTQB4		•	•	•	•	•	•	•									
	4 Way Cassette (840 x 840) ARNU**GTBB4/ARNU**GTAB4									•	•	•	•	•	•			
Ceiling Mounted	4 Way Cassette High Sensible (840 x 840) ARNU**GTAA4			•	•	•	•	•		•	•		•	•	•			
Cassette	Round Ceiling Cassette ARNU**GTYA4									•			•		•			
	2 Way Cassette ARNU**GTSC4				•	•		•		•								
	1 Way Cassette ARNU**GTUB4 / ARNU**GTTB4			•	•	•		•		•								
	Mid /High Statics ARNU**GTUB4 / ARNU**GTTB4			•	•	•	•	•		•	•		•	•	•	•	•	•
Ceiling Concealed Duct	Low Statics ARNU**GL*A4		•	•	•	•	•	•	•	•								
	High Sensible ARNU**GM*A4 / ARNU**GB8A4			•	•	•	•	•		•	•		•	•	•			
Fresh Air Intake	ARNU**GB8Z4																•	•
Ceiling & Flooi Convertible	ARNU**GVEA4				•	•												
Ceiling Suspended	ARNU**GV*A4							•		•			•		•			
Console	ARNU**GQAA4			•	•	•	•											
Floor	Floor Standing with Case ARNU**GCEA4			•	•	•	•	•		•								
Standing	Floor Standing without Case ARNU**GCEU4			•	•	•	•	•		•								
	Wall mounted hydro kit ARNH**GK1A4		•	•	•													
HYDRO KIT	Low Temperature ARNH**GK2A4	•10												•				•
	High Temperature ARNH**GK3A4	•												•			•	
Energy Recovery	with Humidifier LZ-H***GXH4						•			•		•						
Ventilator with DX Coil	h without Humidifier LZ-H***GXN4						•			•		•						

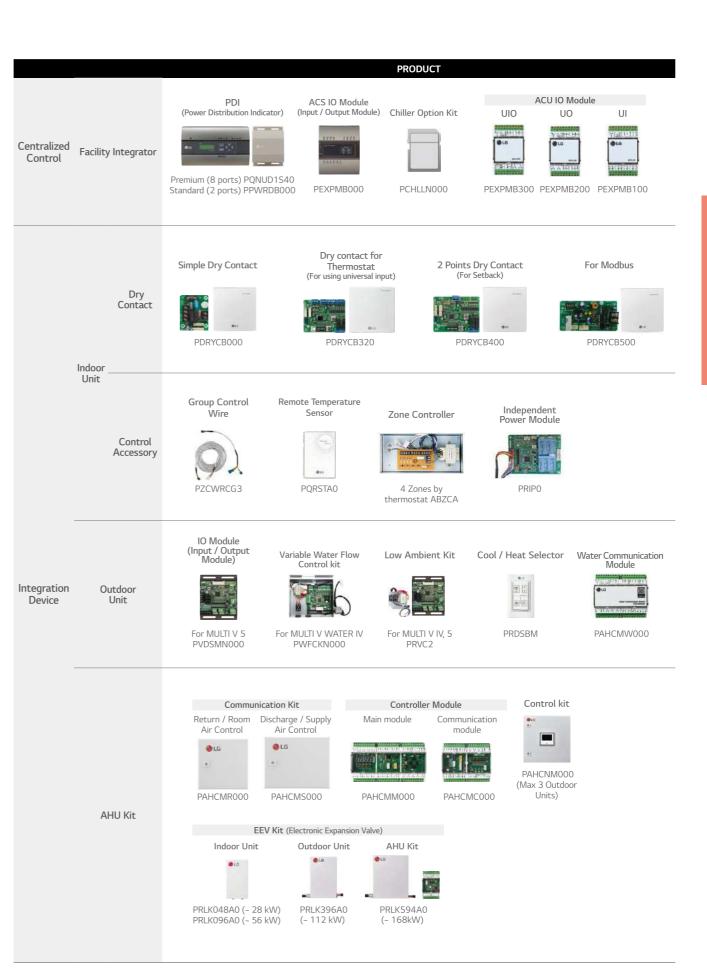
FEATURE OVERVIEW

FEAT	URE	OVER	VIEW	l											
Energy Monitoring	2 Set Point	Occupied / Unoccupied Scheduling Function	Group Control	Test Run (Cooling)	Test Run (Heating)	Model Information Monitoring	Auto Addressing	Refrigerant Leakage Detection	Thermo On / Off Range Setting (Cooling)	Thermo On / Off Range Setting (Heating)	Static Pressure 11 Step Control (Only for Ceiling Concealed Duct Type)	1 Point External Input (On / Off Control)	Filter Sign (Remaining Time)	Auto Restart Function Disable / Enable	Wi-Fi Ready
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HVAC CONTROL



					PRODUCT		
	Wired	andard	Standard III (White) 2 (02) PREMTB100	Standard III (Black) 210 PREMTBB10	Standard II (White) PREMTB001	Standard II (Black) PREMTBB01	Premium 25 PREMTA000 PREMTA000A PREMTA000B
Individual Control	Remote Controller	Simple	PQRCVCLOQW	PQRCVCLOQ	PQRCHCA0QW (Simple for Hotel)	PQRCHCA0Q (Simple for Hotel)	
	Wireles: Remote Controlle	<u> </u>	PWLSSB21H (Heat Pump) PWLSSB21C (Cooling Only)	WI-FI Modem			
	Display		AC Ez PQCSZ250S0 (Indoor Unit ~32)	AC Ez Touch PACEZA000 (Indoor Unit -64)	AC Smart 5 PACS5A000 (Indoor Unit ~ 128) BACnet IP / Modbus TCP		
Centralized Control	Platforn	n	PACP5A000 (Indoor Unit - 256) BACnet IP / Modbus TCP	AC Manager 5 PACM5A000 (Indoor Unit ~ 8,192)			
	Gatewa	у	ACP LonWorks (Indoor Unit ~64)	Modbus RTU Gateway	PI-485 For Indoor Unit (ERV) (PI-485 For Outdoor Unit SINGLE / MULTI / THERMA \ PMNFP14A1	v)

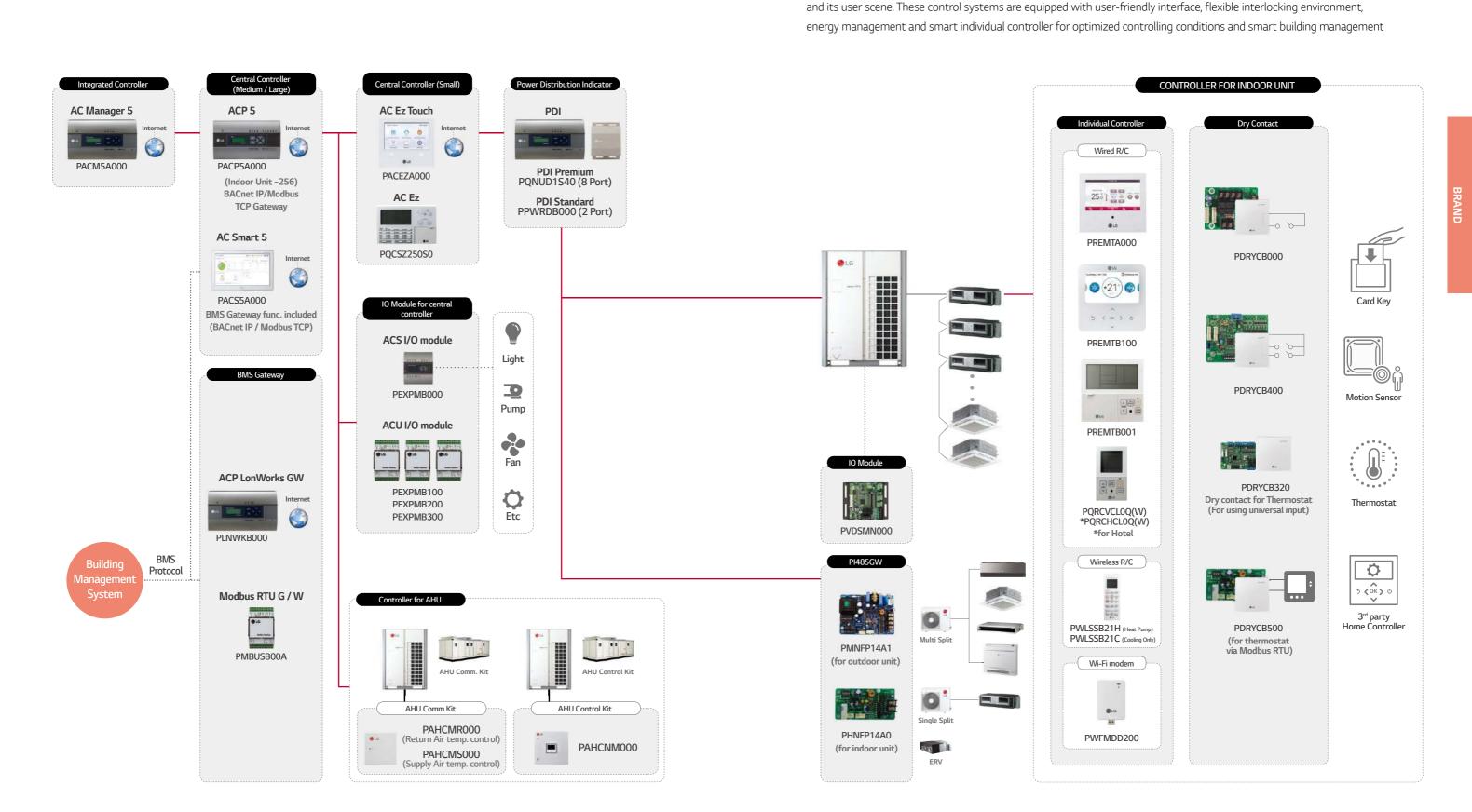


HVAC CONTROL



CONTROL SYSTEM ARCHITECTURE





WALL-MOUNTED



INDOOR UNITS					O Single	Split Only O	Compatible	Multi Split Only
MODEL	KBTU	5	7	9	12	15	18	24

МС	DEL	KBTU KW	5 1.5	7 2.1	9 2.6	12 3.5	15 4.2	18 5.3	24 7.0
	Gallery	R32) Wi-Fi			O A09FT NSF	O A12FT NSF			
ARTCOOL	Mirror	R32) Wi-Fi		AM07BH NSJ	O ● AC09BH NSJ	O● AC12BH NSJ		O ● AC18BH NSK	O ● AC24BH NSK
	Prestige	(R32) (Wi-Fi			O F09MT NSM	O F12MT NSM			
	Air Purification	(R32) (Wi-Fi			O ● AP09RT NSJ	O ● AP12RT NSJ			
	Deluxe	R32)		DM07RH NSJ	O ● DC09RH NSJ	O ● DC12RH NSJ		O ● DC18RH NSK	O ● DC24RH NSK
DUALCOOL	Deluxe 2	R32) Wi-Fi			O ● DC09RT NSJ	O ● DC12RT NSJ			
DUALCOOL	Standard Plus	R32) Wi-Fi	PM05SP NSJ	PM07SP NSJ	O ● PC09SQ NSJ	O ● PC12SQ NSJ	PM15SP NSJ	O ● PC18SQ NSK	O ● PC24SQ NSK
	Standard 2	R32 Wi-Fi		MS07ET NSJ	O ● S09ET NSJ	O ● S12ET NSJ		O ● S18ET NSK	O ● S24ET NSK
	Standard	R32)			O S09EQ NSJ	O S12EQ NSJ		O S18EQ NSK	O S24EQ NSK
	Standard 3	R32)			O S09EH NSA	O S12EH NSJ			

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OUTDO	OR UNI	TS						Os	ingle Split Onl	ly O Com	patible	Multi Split Only
МО	DEL		KBTU KW	9 2.6	12 3.5	14 4.1	16 4.7	18 5.3	21 6.2	24 7.0	27 7.9	30 8.8
	Gallery	(R32)	0	O A09FT UL2	O 2 A12FT UL2							
ARTCOOL	Mirror	R32)	0	O AC09BH UA	O 3 AC12BH UA3			O AC18BH UL2		O AC24BH U24		
	Prestige	(R32)	01	O F09MT U2-	O 4 F12MT U24							
	Air Purification	(R32)	0:	O APO9RT UA	O 3 AP12RTUA3							
	Deluxe	(R32)	0:	O DC09RH UL	O 2 DC12RHUL2			O DC18RH UL2		O DC24RH U24		
DUALCOOL	Deluxe 2	(R32)	0	O DC09RT UA	O 3 DC12RTUA3							
	Standard Plus	(R32)	0	O PC09SQ UA	O 3 PC12SQUA3			O PC18SQ UL2		O PC24SQ U24		
	Standard 2	(R32)	0:	O S09ET UA3	O 3 S12ET UA3			O S18ET UL2		O S24ET U24		
	Standard	(R32)	0:	O S09EQ UA:	O 3 S12EQ UA3			O S18EQ UL2		O S24EQ U24		
	Standard 3	(R32)	0:	O S09EH UA:	O 3 S12EWUA3							

[%] Products which contain R32 (GWP 675) are pre charged over 0.6kg- and t-CO2 eq is over 0.41-. (The values are changed by the capacities of products)

WALL-MOUNTED



FEATURE OVERVIEW

INVERTE				CORE TECH		SMART		ENERGY EI	FFICIENCY
1 YEAR								₽	-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
WARRAN	ГҮ		Cooling Heating	Dual Inverter Compressor	Voice Control	Embedded Wi-Fi	Smart Diagnosis	Active Energy Control	Energy Display
	Gallery		9k 12k	•	•	•			
ARTCOOL		_	9k 12k 18k 24k	•	•	•	•	•	•
	Mirror	<u>n</u>	Only for Multi 7k ⁴⁾	•	•	•			
	Prestige		9k 12k	•	•	•	•	•	•
	Air Purification	- 5	9k 12k	•	•	•	•	•	•
	Deluxe	5	9k 12k 18k 24k	•	•	•	•	•	•
	Deluxe		Only for Multi 7k ⁴⁾	•	•	•			
	Deluxe 2		9k 12k	•	•	•	•	•	•
	Detake 2	<u> </u>	Only for Multi 7k ⁴⁾	•	•	•			
DUALCOOL	Standard		9k 12k 18k 24k	•	•	•	•	•	•
	Plus	1	Only for Multi 5k 7k 15k ⁴⁾	•	•	•			
	Standard 2		9k 12k 18k 24k	•	•	•	•	•	•
	Juliana La	-	Only for Multi 7k ⁴⁾	•	•	•			
	Standard	#	9k 12k 18k 24k	•			•	•	•
	Standard 3		9k 12k	•	•	•	•	•	•

Feature may vary	for	each	mode
------------------	-----	------	------

When combines with 40kBtu, Cooling A+, Heating A
 Wi-Fi Ready: can be connected by using Wi-Fi Controller (PWFMDD200)
 Please refer to the specifications of Multi outdoor units.

reature may vary for each model.
1. When connected to Multi Outdoor unit, Silent Mode 3dB is working by simply setting the dip switch on the PCB of the outdoor un
2 When combines with 40kBtu Cooling A L Heating A

	COMFORT		ŀ	HEALTHCAR	E	DURABILITY	FAST C	OOLING & H	EATING	MULTI
Comfort Air	Low Noise	Silent Mode	PM 1.0 SENSOR		Auto	Gold Fin™	Jet Cool	4 Way	Fast Heating	Compatible
(Indirect Cooling/ Heating)	19dB	3dB	Sensing (PM 1.0)	Plasmaster Ionizer PLUS	Cleaning			Swing		
					•	•	•	3 way	•	
•	•	•		•	•	•	•	•	•	•
•	•	•		•	•	Black Fin	•	•	•	
•	•	•		•	•	•	•	•	•	
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•	•	•		•	•	•	•	•	•	•
•	•	•		•	•	Black Fin	•	•	•	
•	•	•		•	•	•	•	•	•	•
•	•	•		•	•	Black Fin	•	•	•	
•	•	•			•	•	•	•	•	•
•	•	•			•	Black Fin	•	•	•	
•	•	•			•	•	•	•	•	•
•	•	•			•	Black Fin	•	•	•	
•	•	•			•	•	•	(18/24k Only)	•	
•	•	•			•	•	•		•	



MULTI SPLIT



R32 INDOOR / OUTDOOR UNITS

O Single Only (Compatible with	Single split	0	O Compatible w	th Single CAC	Multi Only
-----------------	--	-----------------	--------------	---	----------------	---------------	------------------------------

	KB'	TU/H		5	7	9	12	15	18	24
	К	w		1.5	2.1	2.6	3.5	4.2	5.3	7.0
	ARTCOOL Gallery	(R32)				MA09R NF1	MA12R NF1			
	ARTCOOL Mirror	R32) Wi-Fi			AM07BH NSJ	O ● AC09BH NSJ	○● AC12BH NSJ		○● AC18BH NSK	○● AC24BH NSK
	Air - Purification	R32)				○● AP09RT NSJ	○● AP12RT NSJ			
Wall Mounted	Deluxe	R32 Wi-Fi	~ <u>J</u>		DM07RH NSJ	○● DC09RH NSJ	O● DC12RH NSJ		O● DC18RH NSK	O● DC24RH NSK
	Standard	R32) Wi-Fi	- 1	PM05SP NSJ	PM07SP NSJ	O ● PC09SQ NSJ	O● PC12SQ NSJ	PM15SP NSJ	O● PC18SQ NSK	O● PC24SQ NSK
	Plus	R32) Wi-Fi		MJ05PC NSJ	MJ07PC NSJ	○© MJ09PC NSJ	○© MJ12PC NSJ	MJ15PC NSJ	○© MJ18PC NSK	○ © MJ24PC NSK
	Standard 2	R32) Wi-Fi	- 1		MS07ET NSJ	○● S09ET NSJ	○● S12ET NSJ		○● S18ET NSK	○● S24ET NSK
Ceiling Mounted	1 Way Cassette	R32)				MT09R NU1	MT11R NU1			
Cassette	4 Way Cassette	(R32)		MT06R NR0	MT08R NR0	○ © CT09F NR0	○© CT12F NR0		○© CT18F NQ0	○ © CT24F NB0
Ceiling	Mid / High Static Pressure	(R32)							○ © CM18F N10	○ © CM24F N10
Concealed Duct	Low Static	(R32)	15			○ © CL09F N50	○ © CL12F N50		○ © CL18F N60	
	Pressure	(R32)	— fi						_	○ © CL24F N30

KBTU/H	14	16	18	21	24	27	30
KW	4.1	4.7	5.3	6.2	7.0	7.9	8.8
Multi	0	0	0:	0:	0:	0	O'
	MU2R15 UL0 2-port	MU2R17 UL0 2-port	MU3R19 U21 3-port	MU3R21 U21 3-port	MU4R25 U21 4-port	MU4R27 U40 4-port	MU5R30 U40 5-port

[※] All indoor units are compatible with R410A outdoor units.

R410A INDOOR / OUTDOOR UNITS

	KBTU	/H	5	7	9	12	15	18	24
	KW		1.5	2.1	2.6	3.5	4.2	5.3	7.0
Ceiling & Floor Cor					CV09 NE2	CV12 NE2			
Console					CQ09 NA0	CQ12 NA0		CQ18 NA0	
	KBTU/H	40			48			56	
	KW	11.7			14.1			16.4	
B.C. dec	Multi Piping	MU5M40 U44	5-port						
iviuiti	Multi Distribution Box FM40AH U34 / FM41AH U		AH U34 7-IDU	FM48	AH U34/FM49AI	H U34 8-IDU	FM56AI	U34/FM57AH	U34 9-IDU

FEATURE OVERVIEW

REFRI				R32		R410A							
ī	YPE				MULTI	PIPING			DB BOX TYPE				
kE	Stu/h	14	16	18	21	24	27	30	40	40	48	56	
	kW	4.1	4.7	5.3	6.2	7.0	7.9	8.8	11.7	11.7	14.1	16.4	
	BLDC Comp & Fan Motor	•	•	•	•	•	•	•	•	•	•	•	
	Eurovent Certification	•	•	•	•	•	•	•	•	•	•	•	
	Variable Voltage Control			•	•	•	•	•	•	•	•	•	
	Wide Louver Plus Fin	•	•	•	•	•	•	•	•	•	•	•	
Energy Efficiency	Optimized Heat Exchanger Path	•	•	•	•	•	•	•	•	•	•	•	
	Power Saving Start up			•	•	•	•	•	•	•	•	•	
	Peak Current Control	•	•	•	•	•	•	•	•	•	•	•	
	Standby Mode	•	•	•	•	•	•	•					
	Mode Lock	•	•	•	•	•	•	•	•	•	•	•	
	R1 Compressor		_						•	•	•	•	
Durability	Twin Rotary Compressor	•	•	•	•	•	•	•					
	Smart Sensor Pressure Control			•	•	•	•	•	•	•	•	•	
	Black Fin Heat Exchanger	•	•	•	•	•	•	•	•	•	•	•	
	Fast Cooling & Heating			•	•	•	•	•	•	•	•	•	
	Night Silent Operation	•	•	•	•	•	•	•	•	•	•	•	
Comfort &	Wiring Error Check	•	•	•	•	•	•	•	•	•	•	•	
Convenience	LG MV	•	•	•	•	•	•	•	•	•	•	•	
	PI-485 Connection			•	•	•	•	•	•	•	•	•	
	Forced Cooling Operation	•	•	•	•	•	•	•	•	•	•	•	

SINGLE SPLIT



H-INVERTER (R32) / STANDARD INVERTER (R32)

	kBtu/h kW		9 2.5	12 3.4	18 5.0	24 6.8	30 8.0	36 9.5	42 12.0	48 13.4	60 14.6	70 20.0	85 25.0
	Ceiling Mou Cassette	ınted	UT09FH NQ0	UT12FH NQ0									
			UTU9FH NQU	UTTZFH NQU	UT18FH NB0	UT24FH NA0	UT30FH NA0	UT36FH NA0	UT42FH NA0	UT48FH NA0	UT60FH NA0		
		Mid Static											
(K32)	Ceiling Concealed Duct			UM12FH N10	UM18FH N10	UM24FH N20	UM30FH N20	UM36FH N30	UM42FH N30	UM48FH N30			
ב ב		Low Static											
H-IINVEKIEK (K3Z)				UL12FH N50	UL18FH N30								
L	Ceiling Susp	ended			1								
					UV18FH N10	UV24FH N20	UV30FH N20	UV36FH N20	UV42FH N20				
	ODU	1Ø,	(6)		● 1.5	0	•		0	*			
	000	3Ø	UUA	1 ULO	UUB1 U20	UUC.	1 U40		UUD1 U30	/ UUD3 U30			
	Ceiling												
	Mounted C	assette	CT09F NR0	CT12F NR0	CT18F NQ0	CT24F NB0	UT30F NB0	UT36F NA0	UT42F NA0	UT48F NA0	UT60F NA0		
	Round Cass	sette						UT36FNY0		UT48F=NY0			
	C 11:	Mid Static			-								
7	Ceiling Concealed Duct				CM18F N10	CM24F N10	UM30F N10	UM36F N20	UM42F N20	UM48F N30	UM60F N30		
Standard Inverter (K32)		Low Static											
Invert			CL09F N50	CL12F N50	CL18F N60	CL24F N30							
ndard	Ceiling Suspended				1	1	1						
Sta					UV18F N10	UV24F N10	UV30F N10	UV36F N20	UV42F N20	UV48F N20	UV60F N20		
	Wall Mount	:ed											
			MJ09PCNSJ	MJ12PCNSJ	MJ18PCNSK	MJ24PCNSK	US30F NR0	US36F NR0					
	Console												
	COLIZOIE		UQ09 NA0	UQ12 NA0	UQ18 NA0								
	ODU	1Ø,		8	e us	0	•		0	*			
	ODU	3Ø	1000	1 UL0	UUB1 U20	111/0	1 U40		LILIDA LIZO	/ UUD3 U30			

COMPACT INVERTER (R32) / STANDARD INVERTER (R410A)

	kBtu/h kW	9 2.5	12	18 5.0	24 6.8	30 8.0	36 9.5	42 12.0	48 13.4	60 14.6	70 20.0	85 25.0
	Ceiling Mounted Cassette	d		CT18F NQ0	CT24F NB0	UT30F NB0	UT36F NA0					
	Mid Stat			CM18F N10	CM24F N10	UM30F N10	UM36F N20					
'ERTER (R32)	Concealed Duct Low Sta			CL18F N60	CL24F N30							
COMPACT INVERTER (R32)	Ceiling Suspende	ed		UV18F N10	UV24F N10	UV30F N10	UV36F N20					
	Wall Mounted					US30F NR0	US36F NRO					
	ODU 1Ø			UUA1 ULO	UUB	1 U20	UUC1 U40					
	Ceiling Concealed Duct (High Static)										And the second	UB85 N94
ERTER (R410A)	Floor Standing								UP48 NT2			
STANDARD INVERTER (R410A)	10								UU48W U32			
	ODU 3Ø								UU49W U32		UU70W U34	UU85W U74

SINGLE SPLIT



FEATURE OVERVIEW

Cat	egory				Н	-Inverter (R3	32)			
kB	tu/h	9	12	18	24	30	36	42	48	60
k	kW	2.5	3.4	5.0	6.8	8.0	9.5	12.0	13.4	14.6
	BLDC Comp & Fan Motor	•	•	•	•	•	•	•	•	•
	Eurovent Certi.	•	•	•	•	•	•	•	•	•
	High Level SEER / SCOP	•	•	•	•	•	•	•	•	•
	Variable Voltage Control	•	•	•	•	•	•	•	•	•
Supreme Energy	Wide Louver Fin	•	•	•	•	•	•	•	•	•
Efficiency	Optimised Heat Exchanger Path			•	•	•	•	•	•	•
	Power Saving Start up	•	•	•	•	•	•	•	•	•
	Peak Current Control			•	•	•	•	•	•	•
	Mode Lock	•*	•*	•	•	•	•	•	•	•
	Standby Mode	•	•	•	•	•	•	•	•	•
	Comfort Cooling with Humidity sensor**			•	•	•	•	•	•	•
Comfort Environment	Night Silent Operation			•	•	•	•	•	•	•
	Continuous Cooling Operation	•	•	•	•	•	•	•	•	•
	Quick & Reliable Operation	•	•	•	•	•	•	•	•	•
High Performance	R1 Compressor						•	•	•	•
& Reliability	Corrosion Resistance Black Fin	•	•	•	•	•	•	•	•	•
	Long Pipe Installation	•	•	•	•	•	•	•	•	•
	LG ThinQ***	•	•	•	•	•	•	•	•	•
	Easy Control (PI-485 Connection)	•	•	•	•	•	•	•	•	•
Convenient Control	1 Point External Input****	•	•	•	•	•	•	•	•	•
System	Forced Cooling Operation			•	•	•	•	•	•	•
	Mobile LG MV	•	•	•	•	•	•	•	•	•
	Weekly Program****	•	•	•	•	•	•	•	•	•
Enhanced	Synchro function									
Application	Connection with AHU			•	•	•	•	•	•	•

Cat	egory				Standar	d Invert	er (R32)				Co	mpact In	verter (R	32)
kB	Stu/h	9	12	18	24	30	36	42	48	60	18	24	30	36
ı	kW	2.5	3.4	5.0	6.8	8.0	9.5	12.0	13.4	14.6	5.0	6.8	8.0	9.5
	BLDC Comp & Fan Motor	•	•	•	•	•	•	•	•	•	•	•	•	•
	Eurovent Certi.	•	•	•	•	•	•	•	•	•	•	•	•	•
	High Level SEER / SCOP	•	•	•	•	•	•	•	•	•	•	•	•	•
	Variable Voltage Control	•	•	•	•	•	•	•	•	•	•	•	•	•
Supreme Energy	Wide Louver Fin	•	•	•	•	•	•	•	•	•	•	•	•	•
Efficiency	Optimised Heat Exchanger Path			•	•	•	•	•	•	•		•	•	•
	Power Saving Start up	•	•	•	•	•	•	•	•	•	•	•	•	•
	Peak Current Control			•	•	•	•	•	•	•		•	•	•
	Mode Lock	•*	•*	•	•	•	•	•	•	•	•*	•	•	•
	Standby Mode	•	•	•	•	•	•	•	•	•	•	•	•	•
	Comfort Cooling with Humidity sensor**	•	•	•	•	•	•	•	•	•	•	•	•	•
Comfort Environment	Night Silent Operation			•	•	•	•	•	•	•		•	•	•
	Continuous Cooling Operation	•	•	•	•	•	•	•	•	•				
	Quick & Reliable Operation	•	•	•	•	•	•	•	•	•	•	•	•	•
High Performance	R1 Compressor						•	•	•	•				
& Reliability	Corrosion Resistance Black Fin	•	•	•	•	•	•	•	•	•	•	•	•	•
	Long Pipe Installation	•	•	•	•	•	•	•	•	•	•	•	•	•
	LG ThinQ***	•	•	•	•	•	•	•	•	•	•	•	•	•
	Easy Control (PI-485 Connection)	•	•	•	•	•	•	•	•	•	•	•	•	•
Convenient Control	1 Point External Input****	•	•	•	•	•	•	•	•	•	•	•	•	•
System	Forced Cooling Operation			•	•	•	•	•	•	•		•	•	
	Mobile LG MV	•	•	•	•	•	•	•	•	•	•	•	•	•
	Weekly Program****	•	•	•	•	•	•	•	•	•	•	•	•	•

Synchro Function

Connection with

Enhanced Application

^{*} With Controller PREMTB001 / PREMTBB01 / PREMTB100 / PREMTBB10

** Available only for Ceiling Mounted cassette (840 x 840), Celling Suspended, Console models.

*** Available with LG Wi-Fi modem (PWFMDD200) and it should be connected to the indoor unit.

**** Available except for Wall Mounted Unit.

^{*****} Weekly program is available with wired remote Controller.

^{*} With Controller PREMTB001 / PREMTBB01 / PREMTBB10 / PREMTBB10

** Available only for Ceiling Mounted cassette (840 x 840), Celling Suspended, Console models.

*** Available with LG Wi-Fi modem (PWFMDD200) and it should be connected to the indoor unit.

**** Available except for Wall Mounted Unit.

^{*****} Weekly program is available with wired remote Controller.

AWHP (THERMA V...)



LINE UP OVERVIEW

Туре		Refrigerant	Line-up	Capacity(kW)	5		7	
			R32	1Ø 230V	HM051M U43		HM071M U43	
Monobloc	-	R32	Monobloc	3Ø 400V				
	Silent		R32 Silent Monobloc	1Ø 230V				
11.1. 15.	Hydro	D22	Dag C. It.	1Ø 230V				
Hydrosplit	Вох	R32	R32 Split -	3Ø 400V				
	Hydro				HN0916M NK4	-	HN0916M NK4	#
	Box	R32	R32 Split	1Ø 230V	HU051MR U44	0	HU071MR U44	0
-	IWT	N32 -	R32 IWT	1Ø 230V	HN0916T NB1		HN0916T NB1	and the
-					HU051MR U44		HU071MR U44	0
	Hydro			1Ø 230V				
Split	Box		R410A Split -	3Ø 400V				
		R410A		1Ø 230V				
	IWT		R410A IWT -	3Ø 400V				
	Floor Standing	R410A + R134a	High Temperature	1Ø 230V				

※ Products which contain R410A (GWP 2087.5) are pre charged over 1.8kg~ and t-CO₂ eq is over 3.76
Products which contain R32 (GWP 675) are pre charged over 1.4kg~ and t-CO₂ eq is over 0.95~.
(The values are changed by the capacities of products)

9	12	14	16
HM091M U43	HM121M U33	HM141M U33	HM161M U33
	HM123M U33	HM143M U33	HM163M U33
HM091MRS U33			
	HN1600MB NK0	HN1600MB NK0	HN1600MB NK0
	HU121MRB U30	HN1600MB NK0	HU161MRB U30
	HN1600MB NK0	HN1600MB NK0	HN1600MB NK0
	HU123MRB U30	HU143MRB U30	HU163MRB U30
HN0916M NK4			<u> </u>
HU091MR U44			
HN0916T NB1			
HU091MR U44			
	HN1616 NK3	HN1616 NK3	HN1616 NK3
	HU121 U33	HU141 U33	HU161 U33
	HN1639 NK3	HN1639 NK3	HN1639 NK3
	HU123 U33	HU143 U33	HU163 U33
HN1616T NB0	HN1616T NB0	HN1616T NB0	HN1616T NB0
HU091 U43	HU121 U33	HU141 U33	HU161 U33
	HN1616T NB0	HN1616T NB0	HN1616T NB0
	HU123 U33	HU143 U33	HU163 U33
			HN1610H NK3
			HU161HA U33

AWHP (THERMA V...)



ACCESSORIES PROVIDED BY LG

Model Nam	ie	Model Number	Figure	Applicable Product	Relevant Function	Purpose	Feature
	Room Temperature Sensor	PQRSTA0	9	All except for R410A IWT	Room Temperature Based Control	To detect room air temperature for room temperature based control	• Max wire length : 15m
Sensors	2 nd Circuit Thermistor	PRSTAT5K10	0	All except for R410A IWT and High temp.	2 nd Circuit	To detect 2 nd circuit temperature when using 2 nd circuit function	• 5kΩ thermistor, 10m
	Domestic Hot Water PHRSTA0 Sensor		0	All except for IWT and High temp. models	Domestic Hot Water Heating	To detect DHW tank temperature	• Included in PHLTA kit
	3Way Valve	OSHA-3V		All except for IWT models	Domestic Hot Water Heating	To divert water flow between space heating and DHW heating	Size : DN 20 G 1" connection, male threaded
Valves	es Thermostatic	OSHA-MV		Regardless	Domestic	To blend hot water with cold water for ensuring constant,	• Size : 3/4" DN20 male threaded
	Mixing Valve	OSHA-MV1		of model	Hot Water Supply	safe shower and bath outlet temperature, preventing scalding.	• Size : 1" DN25 male threaded
	Domestic Hot Water Tank (Single Coil)	OSHW-200F OSHW-300F OSHW-500F		All except for IWT models	Domestic	To generate and	• Storage volume : 200L, 300L, 500L • Type : Internal single coil • Material : Stainless steel • Capacity of booster heater : 2.4kW
Tanks	Domestic Hot Water Tank (Double Coil)	OSHW-300FD		All except for IWT and High temp. models	Heating		Storage volume: 300L Type: Internal double coil Material: Stainless steel Capacity of booster heater: 2.4kW
	Domestic	PHLTA (1Ø, Split)		All except	Domestic		Parts included: DHW tank sensor (Thermistor), Circuit breaker, Relay
Installation Kits	Hot Water Tank Kit	PHLTC (3Ø, Split) PHLTB (Monobloc)	THURMAV.	High temp. models	Hot Water Heating	To operate with DHW tank	Parts included: DHW tank sensor (Thermistor), Circuit breaker, Relay, Multi harness
	Solar Thermal Kit	PHLLA	0	All except for IWT, Hydrosplit and High temp. models	Solar Thermal Heat Utilization	To operate with solar thermal system	• Length of thermistor : 12m • Size of tube connector (W×H×D): 110 × 55 × 22

Cover plate (for Split IDU) PDC-HK10

AWARDS RECORDS PRODUCT RANGE LINE UP

Applicable Product Relevant Function

• Heater capacity : 3kW

		HA031M E1	@ LG				• Heater Capacity: 3KW • Number of heating coil: 1EA (3.0kW) • Size (W x H x D): 210 x 607 x 217 • Power: 220 ~ 240V, 1Ø
Installation Kits	Electric Back up heater (for Monobloc)	HA061M E1		R32 Monobloc and R32 Silent Monobloc (HA063M E1 is not applicable for R32 Silent Monobloc)	Capacity back up & Emergency Operation	To supplement insufficient capacity	Heater capacity: 6kW Number of heating coil: 2EA (3.0 + 3.0kW) Size (W x H x D): 210 x 607 x 217 Power: 220 ~ 240V, 1Ø
		HA063M E1	• •				Heater capacity: 6kW Number of heating coil: 3EA (2.0 + 2.0 + 2.0kW) Size (W x H x D): 210 x 607 x 217 Power: 380 - 415V, 3Ø
Vessel	Buffer tank for space heating	OSHB-40KT		R32 IWT	-	To provide the buffer volume of water to the heating circuit	• Volume : 40L • Size (W x H x D) : 518 x 560 x 175
vesser	Expansion vessel for DHW	OSHE-12KT		R32 IWT	-	To absorb the volume changes by temperature of water for the DHW circuit	• Volume : 8L • Connection : 3/4" • Max. pressure : 10 bar • Size (W x H x D) : 416 x 238 x 502
	Extension wire for wire remote controller	PZCWRC1		All except for R410A IWT	-	To extend wire between wired remote controller and indoor unit	• Length : 10m
	Extension cable for Wi-Fi Modem	PWYREW000		All except for R410A IWT	Wi-Fi Control via LG ThinQ	To extend wire between WI-Fi modem and indoor unit	• Length : 10m
ETC	2-Remo Control Wire	PZCWRC2		All except for R410A IWT model	2-Remote Control	To connect two remote controller on the one indoor unit	• Length : 0.25m
	Drain pan	PHDPB	•	R32 Split, R410A Split	Cooling	To collect condensed water	
	(for Split IDU)	PHDPC		R32 Hydrosplit	Operation	in indoor unit when cooling operation	-
				R32 Hydrosplit,		To fill the blank space of the indoor	

R32 Split, R32 IWT, R410A Split

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unit front panel when the remote controller is relocated indoors.

AWHP (THERMA V...)



ACCESSORIES PROVIDED BY LG

Model Nam	ne	Model Number	Figure	Applicable Product	Relevant Function	Purpose	Feature
Remote Controller	Wired Remote Controller	PREMTW101	10 10 Am 2 0	All except for R410A IWT model	2-Remote Control	two remote	New modern design 4.3 inch color LCD display. Information displayed with simple graphic, icon & text. Built-in temperature sensor Size (W x H x D): 120 x 120 x 16 Extension cable (PZCWRC1, 10m) and 2-remo cable (PZCWRC2, 0.25m) are included.
	AC Ez Touch	PACEZA000					 5 inch color display User-friendly control with iconographic interface (Touch screen) Max 64 unit control Total 200 schedule events (Weekly / Monthly / Yearly / Exception day) Operation history Remote controller lock (All, Temp, Mode) PC access supported (IPv6 supported) DI 1EA (Emergency stop only) Size (W x H x D): 137 x 121 x 25
Central Controller	AC Smart 5	PACS5A000		All except for R410A IWT model	Centralized Control	To control AWHP using LG central controller	• 10 inch type color display • User-friendly control with iconographic interface (Touch screen) • Max 128 unit control • Total 100 schedule events (Weekly/Monthly/Yearly/Exception day) • History / Operation trend • Interlock with 3 rd party equipment (ACS IO, ACU IO Module is needed) • Error alarm by e-mail • Remote controller lock (All, Temp, Mode) • Map view (Visual navigation) • Web access supported with HTML5 (PC, Smartphone, Tablet) • DI 2EA, DO 2EA • BACnet IP / Modbus TCP protocol support • Size (W x H x D): 253.2 x 167.7 x 28.9
	ACP 5	PACP5A000	• See Call				Web access controller Max 256 unit control Total 100 schedule events (Weekly/Monthly/Yearly/Exception day) History / Operation Trend Interlock with 3 rd party equipment (ACS IO, ACU IO Module is needed) Error alarm by e-mail Remote controller lock (All, Temp, Mode) Map view (Visual navigation) DI 10EA, DO 4EA BACnet IP / Modbus TCP protocol support Size (W x H x D): 270 x 155 x 65
Gateway	ACP Lonworks	PLNWKB000	The state of the s	All except for R410A IWT model	Centralized Control	To link with AWHP and other existing building control system	Web access controller Max 64 unit control ACP function included Lonworks protocol support

AIR SOLUTION AWARDS RECORDS PRODUCT RANGE LINE UP VISION

Model N	ame	Model Number	Figure	Applicable Product	Relevant Function	Purpose	Feature
	Modbus RTU Gateway	PMBUSB00A	五 12.4	All except for R410A IWT model	-	To communicate and control through the central controller (Providing Modbus RTU connection between AWHP and BMS)	Modbus RTU slave (RS485) / 9,600 bps Size (W x H x D) : 53.6 x 89.7 x 60.7 Max 16 IDUs with single module / Max 64 IDUs with 4 modules Power: DC 12V
Gateway	PI485 Gateway	PMNFP14A1 ¹⁾		All except for R410A IWT model	Centralized Control	To communicate and control through the central controller (Converting LG protocol to RS485 protocol)	1 for each outdoor unit Power : Supplied by outdoor unit
	Pl485 Gateway	PP485B00K ²⁾	Elle to s	R410A IWT		To communicate between outdoor unit and IWT type indoor unit	1 for each outdoor unit Power: Supplied by outdoor unit
Dry Contact	Simple Dry Contact	PDRYCB000	4.	All except for R410A IWT model	-	To connect between the AWHP and external devices to control various functions	 1 Set per 1 unit 1 Input contact for turning On/Off Input power: 220 ~ 240V 2 Output contacts Operation status - Error status
	LG Wi-Fi Modem	PWFMDD200	● LG	All except for R410A IWT model	Wi-Fi Control via LG ThinQ	To control AWHP via smartphone	Basic control function On/Off, Operation mode, Set temp DHW heating and Set temp Weekly On/Off schedule Error status check Frequency: 2.4GHz IEEE 802.11b/g/n supported
ETC	Meter Interface	PENKTH000	Control of the second of the s	All except for R410A IWT model	Energy Monitoring	To measure production / Consumption power	Energy meter interface to monitor Electricity and Heat energy Max 3 watt
	2 Zone Valve Controller	PZNVVB200	LG I have considered by A. A.	All except for R410A IWT model	Zone Valve Control	To control individual zone valves with room temperature sensor or room thermostat	Individual temperature setting possible. (To be set through wired remote control in room temperature input mode) Room temperature detection (AI: 2 ports) 3rd party thermostat interlock input. (DI: 2 port) Can read one DI or AI for each zone. Maximum number of connections Max 4EA (Expandable up to 8-zone) Power: DC12V for Module, AC24V for valve Size (W x H x D): 54 x 90 x 61

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Note
1. Pl485 Gateway (PMNFP14A1) should be installed on outdoor unit to use Central controller.
2. Pl485 Gateway (for R410A IWT type, PP485B00K) is required for communication between outdoor unit and indoor unit. (Install at outdoor unit)

INVERTER SCROLL CHILLER



INVERTER SCROLL CHILLER LINE-UP



Max. 10 chillers can be controlled by 1 central controller up to 2,220kW.

[%] Products which contain R410A (GWP 2087.5) are pre charged over 14kg~ and t-CO₂ eq is over 29.23~. (The values are changed by the capacities of products)





AIR PURIFIER

/ III CI OI III IEI			
Applicable area (CA, m²)	91	58	-
Exterior			
Model Name	AS95GDWV0	AS60GDWV0	PuriCare 360 Filter
Туре	Wearable Air Purifier		UV Case
			12.22
Model Name	AP300AWFA		PWKAUW01

APPLIED (FCU)



LINE-UP OF FCU & CENTRAL CONTROLLER

	Capacity (kW)* (kBtu/h)	1.8 6k	2.7 9k	3.2 11k	4.1 14k	6.0 20k	7.2 24k	9.0 30k	10.5 36k	13.0 44k
Ceiling	4 Way Cassette	•	•	•	•	•	•	•	•	•
Mounted	Body Size (WxHxD,mm)	57	70x214x5	70	570x 256x 570	84	10x204x8	40	840x24	46x840
Cassette	Front Panel		PT-UQC		CHW0 style)		PT-UI	MC(1)	j	

	Capacity (kW)* (kBtu/h)		1.8 6k	2.5 9k	3.2 11k	3.9 13k	5.5 17k	6.6 22k		
Ceiling Concealed	Low ESP Duct	•	•	•	•	•	•	•		
Duct	Body Size (WxHxD,mm)	700x19	90x700	900x19	90x700	11	00x190x7	00		

 ^{*} All lineups are for 2 pipes type only.
 * Based on Cooling Capacity. Cooling Capacity testing condition: Inlet/Outlet Water Temperature 7°C / 12°C, Indoor Air Temperature 27°CDB / 19°CWB

LG Central Co	ontroller	AC Ez	AC Ez Touch	AC Smart 5 ¹⁾	ACP 5 ¹⁾	ACP Lonworks	AC Manager 5 ²⁾
		PQCSZ250S0	PACEZA000	PACS5A000	PACP5A000	PLNWKB000	PACM5A000
Max.	IDUs (A/C, FCU)	16	32	64	128	64	4,096
	A/C + ERV	32	64	128	256	64	-
Connectable	AHU	-	-	16	16	16	-
Vo.	Chiller	-	-	5 Optional 3)	10 Optional 3)	-	-

 ¹⁾Without additional device, ACP 5 and AC Smart 5 provide BACnet IP and Modbus TCP interface for BMS
 2) ACP 5 or AC Smart 5 is required
 3) Except for some features (user mode, additional function, etc.)

ACCESSORIES & PARTS FOR WATER PIPES CONNECTION

Remote	Premium PREMTA000(A/B) Standard III PREMTB100 (White) PREMTBB10 (Black)
Controller	Wireless Remote Controller PQWRHQ0FDB PWLSSB21H/C (Heat Pump/Cooling Only) ²⁾
Dry Contact	PDRYCB000 PDRYCB400 (Simple) PDRYCB400 (for Thermostat)
ETC.	Remote Temperature Sensor PQRSTA0 Wi-Fi Modem PWFMDD200
LTC.	Group Control Wire PZCWRCG3 2-Remo. Control Wire PZCWRC1 Drain Hose PZCWRC1 (1EA, 5m)
Parts for Water	Rubber Packing (4EA, OD23 ×ID15 × t3.2) Flexible Pipe (2EA, FPF ¾", 350mm/500mm Ordered Specification)
Pipes Connection (Purchase on Site)	Nipple 2Way Valve (2EA, MPT ¾", MPF ¾") (On/Off, 2-wires or 3wires) Valve insulation Material (1EA)
(installer Purchase)	Ball Valve (2EA, FPT ¾", 20A) Nipple (2EA, MPT ¾", MPF ¾")
	Strainer (1EA, FPF ¾", ±30) Water Pipe (2EA, 20A, Copper or Stainless Tube)
1) It could not be operated some fun	actions 2) To be released in the 1st quarter of 2020 3) To be released in the 1st half of 2020

⁴⁾ The dry contact for Modbus is built-in to the FCU as default.

³⁾ To be released in the 1st half of 2020

LG ESS SOLUTION



PCS (POWER CONDITIONING SYSTEM)



Capacity (kW)	1,0	000	1,000 (ULType)	2,000	2,000	
Max.Efficiency(%)	98.6	98.6	98.7	98.4	98.5	
Exterior				1 11 11		
Model Name	EF01M452131	EF01M412131	EF01M532111	P002MH45112	EF02M41N111	

Capacity (kW) Max.Efficiency(%)	100 97.5
Exterior	
Model Name	EF50T332111

- Commercial & Industry Application Possible for applying to commercial building & power plants and using as Peak Shifting, Renewable Integration,
- Frequency Regulation

LI-ION BATTERY

Capacity (Ah)	145 218				290			
Energy (kWh)		7.4		11.2		14.9		
High Energy Module								
Model Name	M48145P5B M48218P5B M48290P5B			P5B				
Capacity (Ah)	145	218	290	145	218	290	290	
- (1) (1)								

C : (A1)	1.45	210	200	1.45	210	200	200
Capacity (Ah)	145	218	290	145	218	290	290
Energy (kWh)	104.3	156.4	208.5	126.6	189.9	253.2	357.5
Rated Voltage(V)		719			873		1233
Voltage Range(V)		588~823			714~1,000		1,008~1,411
Exterior Rack		and the second s			A proposition of the		(prespondent
Model Name		R800			R1000		R1500
(Battery Rack)	EF01M452131	EF01M412131	EF01M532111	EF01M532111	EF01M532111	EF01M532111	EF01M53211

⁻ Commercial & Industry Application

THREE-PHASE ESS HOME SERIES

	PCS ¹⁾ (5kW)	Battery (6.4kWh)
Battery Expansion	6.4kWh x 2	6.4kWh x 2
Exterior	555	
Model Name	Home 5	HB 6.4

- Premium three-phase ESS solution for European residential market
- 1) Power Conditioning System, 2) Maximum Power Point Tracking

	PCS ¹⁾ (8kW)	PCS (10kW)	Battery (7kWh & 9.8kWh)
Battery Expansion	combination with HB 7H and HB 10H	combination with HB 7H and HB 10H	combination with HB 7H and HB 10H
Exterior		-	
Model Name	Home 8	Home 10	HB 7H & 10H

- Premium three-phase ESS solution for European residential market
- 1) Power Conditioning System, 2) Maximum Power Point Tracking





ERV LINE-UP

Model						
ERV			(I)(I)			
Unit	LZ-H025	GBA4	LZ-H03	B5GBA5	LZ-H05	50GBA5
ERV		00				
Unit	LZ-H080)GBA5	LZ-H1(00GBA5	LZ-H150GBA5	LZ-H200GBA5
ERV WITH DX COIL			() ()-			
Unit	LZ-H050GXH4	LZ-H080GXH4	LZ-H100GXH4	LZ-H050GXN4	LZ-H080GXN4	LZ-H100GXN4

LG HVAC SOLUTION OVERVIEW



Sogmont	O	ffice
Target Vertical		The state of the s
Needs	Low / Middle Rise Owner: - Cost Saving Consultant: - Reliable Operation - Easy To Design - Save Installation Space Building Manager: - Easy Monitoring And Zone Control - Easy Maintenance	High Rise / High Volume Owner: - Cost Saving Consultant: - Reliable Operation Building Manager: - Easy Monitoring And Zone Control - Easy Maintenance
Approach		
	 - High efficiency by Dual Sensing Control - Human detect sensor for saving electricity consumption - Compressor back up for emergency operation - Large capacity outdoor unit - Long pipe connection (225m long piping length, 1,000m total piping length) - Scheduled Operation & individual control for each zone - Fault Detection and Diagnosis 	- High efficiency by partial operation - Human detect sensor for saving electricity consumption - Compressor back up for emergency operation - Less water consumption & power consumption by Variable Water Control System - Mobile Monitoring and Control - Fault Detection and Diagnosis
Benefit	 Operation Cost Saving By High Efficiency Cost Saving By Wider Space Usage Flexible Design From Long Pipe Connection Convenient Control & Monitoring Maintenance Cost & Time Saving 	- Operation Cost Saving By High Efficiency - Convenient Control & Monitoring - Maintenance Cost & Time Saving

Residential

Single Family House

Owner:

- Good Looking Interior
- Pleasant Indoor EnvironmentLow Operation Cost

Consultant :

- Good Looking Interior
- Low Operation Cost

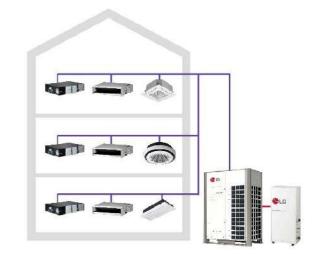
Multi Family House

- Owner:
- Comfort & Healthy Environment
- Low Operation Cost

Consultant: - Easy To Design

- Easy Billing To Each Tenant





- Premium & luxurious design indoor unit
- Low noise mode for both indoor and outdoor unit
- High efficiency by dual sensing SLC
- Ventilation system
- Indoor Air purification & inonizer

- Air Purification, Ventilation (AHU)
- Low noise mode for both indoor and outdoor unit
- High efficiency by Dual Sensing Control
- Long pipe connection (225m long piping length,
- 1,000m total piping length)
- Power distribution indicator

- Enhance Interior Design
- Good Indoor Air Quality
- Operation Cost Saving By High Efficiency

- High Indoor Air Quality From Fresh Air & Air Purification
- Low Noise For Comfortable Indoor Environment
- Operation Cost Saving By High Efficiency
- Flexible Design From Long Pipe Connection
- Easy Billing By Separate Tenant Report

SOLUTION OVERVIEW

LG HVAC SOLUTION OVERVIEW



Segment	Re	tail
Target Vertical		
Segment	Small	Large
Needs	Owner: - Cost saving - Maximized available space Installer: - Easy installation - Product in case no space for outdoor unit - Easy service	Owner: - Cost saving Consultant: - Easy to design - Easy billing to each tenant Building manager: - Easy monitoring and control - Easy maintenance
Approach		
	- High efficiency by dual sensing SLC - Compact size of outdoor unit - Piping flexibility & light weight - module type outdoor unit - Fault Detection and Diagnosis	- High efficiency by Dual Sensing Control - Human detect sensor for empty space - Large capacity outdoor unit & EEV kit for AHU - Long pipe connection (225m long piping length, 1,000m total piping length) - Power distribution indicator - Scheduled Operation & individual control for each zone - Fault Detection and Diagnosis
Benefit	- Operation cost saving by high efficiency - Save installation space from compact outdoor unit - Installation cost & time saving - Maintenance cost & time saving	- Operation cost saving by high efficiency - Installation space saving from large capacity unit - Flexible design from long pipe connection & EEV kit - Easy billing by separate tenant report - Convenient control & monitoring - Maintenance cost & time saving

Hotel	Education	Hospital / Clinic (Healthcare facility)
Owner: - Cost saving - Pleasant & Safe indoor environment for guest Consultant: - Easy to design - Reliable operation Building manager: - Easy monitoring and control - Easy maintenance	- Investor: - Cost saving - Pleasant environment for learning Consultant: - Flexible design for different area (Office / library / Lecture Hall etc.) - Reliable opeartion Building Manager: - Easy differentiated control for different zone - Simple, easy and automatic controls	- Investor: - Cost saving - Comfortable environment for patient Consultant: - Clean air & contamination elimination - Hot water supply Building Manager: - Easy differentiated control for different zone - Simple, easy and automatic controls
- High efficiency by Dual Sensing Control - Large capacity outdoor unit & EEV kit for AHU - Long pipe connection (225m long piping length,1,000m total piping length) - Compressor back up for emergency operation - Scheduled Operation & individual control for each zone - Fault Detection and Diagnosis - Control solution based on check-in and occupancy - Refrigerant leak detection solution	- High efficiency by Dual Sensing Control - Air Purification, Ventilation (AHU) - Large capacity outdoor unit & EEV kit for AHU - Long pipe connection (225m long piping length, 1,000m total piping length) - Various application for each space - Compressor back up for emergency operation - Scheduled Operation & individual control for each zone - Fault Detection and Diagnosis	- High efficiency by Dual Sensing Control - Control solution based on check-in and occupancy - Ventilation system for fresh air & Air Purification - Hydrokit application for hot warter producing - Scheduled Operation & individual control for each zone - Fault Detection and Diagnosis
 Operation cost saving by high efficiency Safe environment by leak detection solution Flexible design from long pipe connection, EEV kit & various application Convenient control & monitoring Maintenance cost & time saving 	- Operation cost saving by high efficiency - Good air quality for studying - Flexible design from long pipe connection, EEV kit & various application - Convenient control & monitoring - Maintenance cost & time saving	- Operation cost saving by high efficiency - Good air quality for recuperating - Flexible design with hydrokit and various application - Convenient control & monitoring - Maintenance cost & time saving

SOLUTION OVERVIEV

LG HEATING SOLUTION OVERVIEW



Segment		Resid	lential			
Target Vertical		Neside in	A CHURCH			
Segment		New Houses				
Designer & Installer Customer Needs		 Don't want refrigerant piping work Using existing facilities for conventional boiler Saving installation and commissioning time No indoor unit 	⟨Split⟩ - Using existing facilities for conventional boiler - Minimized wiring works - Eliminating the potential freezing risk at exposed water piping ⟨IWT⟩ - Saving installation and commissioning time - Where mechanical room is very limited - Easy to carry - Saving installation space for buffer tank and expansion tank			
	End- User	- Low operation cost - Reliable operation and long lifetime - Easy and intuitive controls - Remote control by smartphone - Quiet operation - Control integration between boiler and THERMA V				
		- Don't want to install refrigerant piping indoors	- Eliminating the potential freezing risk at exposed water piping			
		Therma V Monobloc	Therma V Split/IWT			
Approach		R32 Monobloc: 5 / 7 / 9kW (1Ø) R32 Silent Monobloc: 9kW (1Ø) - High energy efficiency - High corrosion resistance heat exchanger - New interface (standard III remote controller) - LG ThinQ Wi-Fi control solution - Low noise mode operation with schedule setting - Easy commissioning by PC tool (LG heating configurator) - Interlocking operation with 3rd party boiler	R32 Split: 5 / 7 / 9kW (1Ø) R32 IWT: 5 / 7 / 9kW (1Ø)			
		- All in one concept (no refrigerant piping work)	- No refrigerant piping work <(IWT only> - All in one concept (integrated DHW tank with indoor unit) - Light weight and small size units - Sophisticated and harmonious exterior of indoor unit - Provides an option to integrate buffer tank and DHW expansion tank into indoor units			
Benefit		- Multiple Solution (heating, cooling and DHW supply) - Energy saving by utilizing renewable energy and high efficient of Hybrid operation with existing facilities - Quick & easy installation and commissioning - Economic support by incentive program	equipment			
		- Simple replacement of existing boiler while maintaining the existing heating system - Saving mechanical room space	- Free of freezing risk against exposed water piping even lon black out <iwt only=""> - Use of valuable machine room space for private purpose</iwt>			

ISTORY OF LG BUSINESS AREA AIR SOLUTION AWARDS RECORDS PRODUCT RANGE LINE UP **SOLUTION OVERVIEW**

		Residential		
	1 m strain (3 m m 1 1 m 1 m 1 m 1 m 1 m 1 m 1 m 1 m		
	Renov		Apartment & Collective Housing	
Don't want refrigerant piping work Using existing facilities for conventional boiler Saving installation and commissioning time No indoor unit	Don't want refrigerant piping work Using existing facilities for conventional boiler Saving installation and commissioning time Easy to carry Minimized wiring works	 Using existing facilities for conventional boiler Minimized wiring works Eliminating the potential freezing risk at exposed water piping 	- Solution for poorly insulated or old house - High DHW temperature to meet sanitary water regulation - Using existing facilities (old radiators)	- Flexible design and application - Easy installation - Energy metering
- Low operation cost - Reliable operation and lon - Easy and intuitive control - Remote control by smartp - Quiet operation - Control integration between	s bhone	- Eliminating the potential freezing risk at exposed water piping	- Low operation cost - Reliable operation and long lifetime - Easy and intuitive controls - Remote control by smartphone - Quiet operation - High water temperature needs	- Low operation cost - Reliable operation and long lifetime - Easy and intuitive controls - Quiet operation
Therma V Monobloc	Therma V Hydrosplit	Therma V Split	Therma V High Temp.	MULTI V S H/R with HYDRO KIT
R32 Monobloc : 12 / 14 / 16kW (1&3Ø)	R32 Hydrosplit : 12 / 14 / 16kW (1&3Ø)	R410A Split: 12 / 14 / 16kW (1&3Ø)	High Temperature : 16kW (1Ø)	Wall Mounted Hydro Kit: 5 / 7 / 9kW (10) Floor Standing M/T Hydro Kit: 14 / 32kW (10) Floor Standing H/T Hydro Kit: 14 / 25kW (10)
- High energy efficiency - High corrosion resistance hea - New interface (standard III re - LG ThinQ Wi-Fi control soluti - Low noise mode operation wi - Easy commissioning by PC to - Interlocking operation with 3	mote controller) on ith schedule setting ol (LG heating configurator)		- High energy efficiency - High corrosion resistance heat exchanger - New interface (standard III remote controller) - LG ThinQ Wi-Fi control solution - Low noise mode operation with schedule setting	- High energy efficiency - New interface (standard III remote controller) - LG ThinQ Wi-Fi control solution - Low noise mode operation with schedule setting
- All in one concept (no refrigerant piping work)	- No refrigerant piping work	- Placing hydronic components and water piping in the mechanical room	- Max. 80°C LWT by Cascade 2 stage compression (R410A - R134a) - Suitable for old radiator	<floor h="" hydro="" kit="" standing="" t=""> - Max. 80°C LWT by Cascade 2 stage compression (R410A - R134a)</floor>
Multiple Solution (heating, co Energy saving by utilizing ren Hybrid operation with existin Quick & easy installation and Economic support by incentive	ewable energy and high efficien g facilities commissioning	t equipment	- Multiple Solution (heating and DHW supply) - Energy saving by utilizing renewable energy and high efficient equipment - Quick & easy installation and commissioning - Economic support by incentive program	- Multiple Solution (heating, cooling and DHW supply) - Energy sawing by utilizing renewable energy and high efficient equipment - Quick & easy installation and commissioning
Simple replacement of existing boiler while maintaining the existing heating system Saving mechanical room space	- Reduce the potential risk of flammable refrigerant	- Free of freezing risk against exposed water piping even long black out	- Free of freezing risk against exposed water piping even long black out	- Simultaneous heating and cooling operation < Wall Mounted Hydro Kit only> - Saving mechanical room space

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LG HEATING SOLUTION OVERVIEW

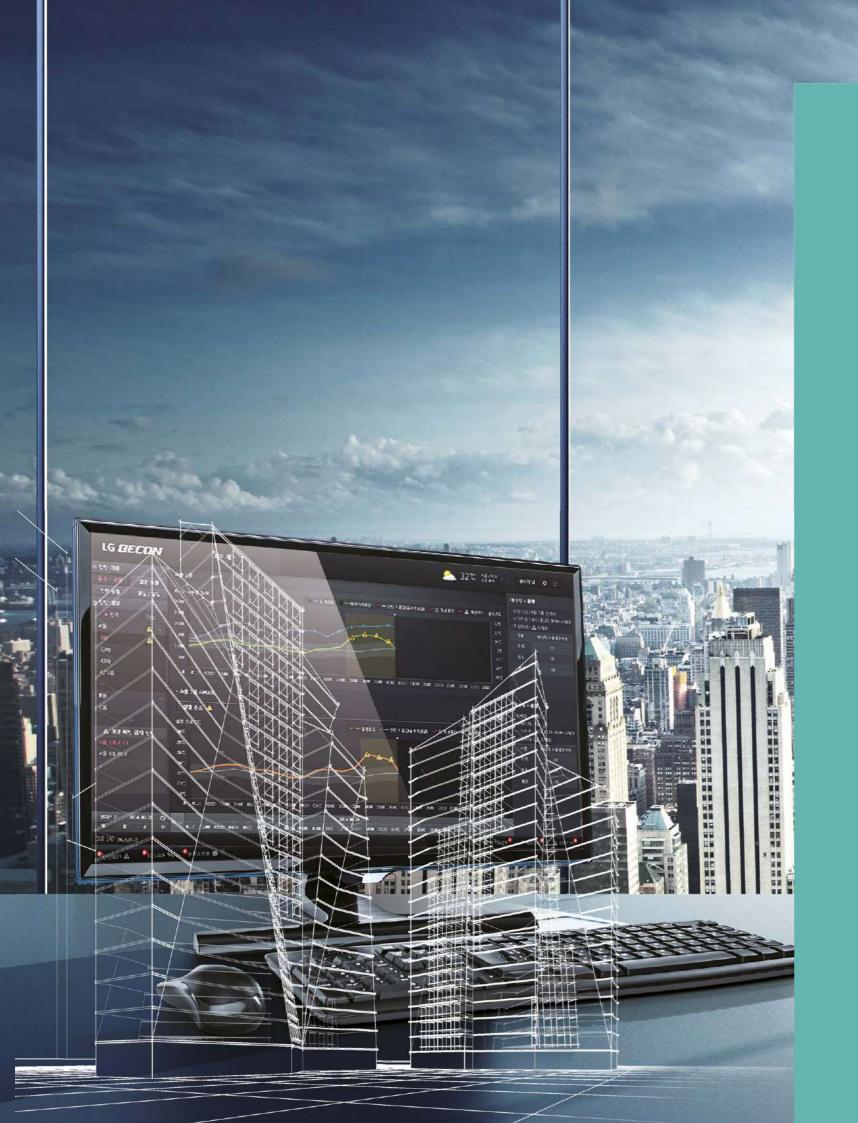


Segment		Commercial			
Target Vertical Segment					
Segment		Office Building			
Designer & Installer Customer Needs		- Flexible design and application - Energy saving with continuous operation			
	End- User	- Low operation cost - Reliable operation and long lifetime - Individual zone control			
		MULTI V 5 with HYDRO KIT			
Approach		Floor Standing M/T Hydro Kit: 14 / 32kW (1Ø) Floor Standing H/T Hydro Kit: 14 / 25kW (1Ø) Capacity variation depends on combination of ODU			
		 - High energy efficiency - Energy saving through MULTI V 5 heat recovery - New interface (standard III remote controller) - Easy to install as it uses a compact and modular structure - High temperature concept of Hydro Kit 			
		<floor h="" hydro="" kit="" standing="" t=""> - Max. 80°C LWT by Cascade 2 stage compression (R410A - R134a)</floor>			
Benefit	 Multiple Solution (heating, cooling and DHW supply) Operation cost saving Simultaneous heating and cooling operation Applicable for various building type Convenient installation & maintenance 				

HISTORY OF LG BUSINESS AREA AIR SOLUTION AWARDS RECORDS PRODUCT RANGE LINE UP SOLUTION OVERVIEW VISION

Comr	nercial
Hotel & Hospital	City Farm
 - Large amount of domestic hot water - Space Heating, domestic hot water, cooling - Flexible design and application - Energy saving with continuous operation 	- Large amount of domestic hot water - Energy saving with continuous operation
Low operation costReliable operation and long lifetimeIndividual zone control	- Low operation cost - Reliable operation with proper water temperature
MULTI V 5 with HYDRO KIT	Inverter Scroll Chiller Heat Pump
Floor Standing M/T Hydro Kit: 14 / 32kW (1Ø) Floor Standing H/T Hydro Kit: 14 / 25kW (1Ø) Capacity variation depends on combination of ODU	Inverter Scroll Chiller Heat Pump : 70 ~ 246kW (3Ø)
 High energy efficiency Energy saving through MULTI V 5 heat recovery New interface (standard III remote controller) Easy to install as it uses a compact and modular structure High temperature concept of Hydro Kit < Floor Standing H/T Hydro Kit > - Max. 80°C LWT by Cascade 2 stage compression (R410A - R134a) 	- High efficient inverter technology - Continuous heating operation - Low noise level
 Multiple Solution (heating, cooling and DHW supply) Operation cost saving Simultaneous heating and cooling operation Applicable for various part load condition Convenient installation & maintenance 	 - Multiple Solution (heating, cooling and DHW supply) - Operation cost saving - Convenient installation & maintenance

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BRAN

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PRODI ICT

ENGINEER

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2

BUSINESS

BUSINESS

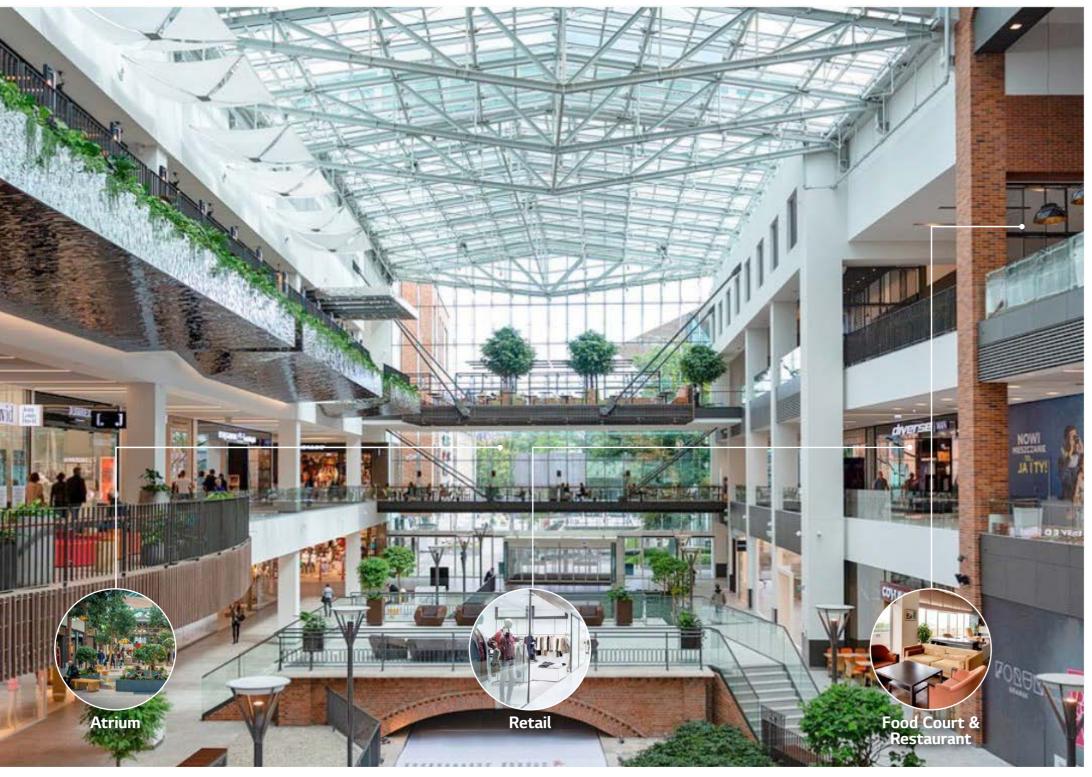
Proposal By Application	05	
Introduction Of BMS	09	
Introduction Of SVC Biz.	11	
Introduction Of Energy Package	12	



PROPOSAL BY APPLICATION

RETAIL SPACE





Why LG?

A typical shopping mall comprises of open-plan social areas and individual spaces. It needs to conisder the requirements of each customer based on the characteristics of each space Our HVAC Solutions provide customer satisfaction.

Owner

• Building aesthetic

- Cost-Saving
- Comfort and a pleasant environment Reliability and maintenance

Customer

- Reliable installation
- Convenience during installation
- Installation cost saving
- Convenient maintenance & service



Contractor

LG not only provides an appropriate HVAC solution to its customers, but also supports the entire process from installation to maintenance



Owner

LG HVAC solutions* can provide the optimized solution in order to enhance building value.



RETAIL SPACE



Owner

Cost-Saving

The various features for energy saving can reduce operation cost

- → Energy saving via high efficiency
- Multi V 5 high efficiency is above EER 4.55
- Dual sensing(Temp.+Humidity) / Smart Load Control
- Running cost 62% reduction against Water-cooled Chiller

Inside



Outside



\rightarrow Save installation units and space

- 1unit Max. 26HP outdoor can reduce product quantity

Contractor

Installation **Cost-Saving**

LG Air conditioner reduces installation

- \rightarrow Initial cost saving
- Reduced 72% initial cost of VRF system against Water cooled Chiller system
- \rightarrow Air purification kit
- no need for an additional air purifier
- \rightarrow Central Controllers
- Max. indoor units

	0/3 0/3 0/3 0/3 0/3 0/3 0/3 0/3 0/3 0/3	## 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
	AC Ez	AC Ez Touch	AC Smart 5	ACP 5
LG	32	64	128	256

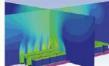
Contractor

Reliable installation

Increased installation reliability through Various design tools and CFD analysis

- \rightarrow LATS CAD & Revit, HVAC
- \rightarrow CFD Analysis
- \rightarrow Expanded piping capabilities
- IDU-IDU: 40m, ODU-IDU: 110m





Contractor

Convenience During Installation

Easy installation reduces installation time

- → Slim body height indoor unit
- 4Way cassette : 204mm, 288mm
- \rightarrow Compact size VRF outdoor unit
- Unlike Chiller system, no need to install additional machine
- → Round Shape Cassette
- One sided piping
- Outside Control Box
- \rightarrow Stopper valve





Owner / Contractor

Convenient Maintenance & Service

Advanced technology product reliability for product

- → Sentence not clear
- Corrosion resistant black fin
- Back up operation without stopping product
- → Convenient maintenance
- Central monitoring and risk management, TMS system
- Individual operating cost distribution
- Auto start up (LG MV)













Provides state-of-the-art technology for high-reliability applications in different environments

- → During Installation Preserving Refrigerant
- Pump down & Pump out
- → Central monitoring and risk management (TMS)
- AC Manager 5, ACP 5, AC Smart 5, AC Ez touch
- \rightarrow LG Service application
- Error Code & Trouble shooting
- Technical Bulletin

RESIDENTIAL BUILDING





Why LG?

Content of shopping mall is used again. This section is for Residential buildings

Developer

- Smart City Concept
- Zero Energy Building Concept
- Global Trend Zero Energy Building
- Green Smart Home Concept





Developer

A comfortable environment is very important for every residence. LG provides the most suitable air conditioner based on the customers' needs.





RESIDENTIAL BUILDING



Developer

Visually Appealing

A visually appealing building is worth a lot more than a standard building layout.

- \rightarrow Interior
- Multi Split and 1way cassette combination increases the attractiveness
- \rightarrow Exterior
- Available multiple indoor units combined with 1 outdoor unit



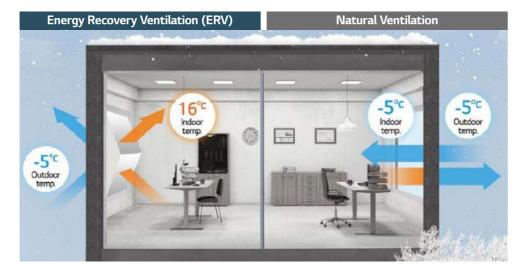


Developer

Healthy Environment

According to the indoor environment conditions, if the sanitary conditions are poor, it may lead to an increased contamination

- \rightarrow Air purification
- Available kits for 1way cassettes that captures fine and microfine dust particles through deodorization
- → Energy Recovery Ventilation



Comfortable air + Energy saving
As opposed to a natural ventilation,
a heat exchanger collects waste energy

Natural Ventilation Heat Energy Loss

Developer

Comfortable Environment

LG will provide great experiences to you Quick and Silent

It is important for people who stay at their home not to have needs about atmosphere

\rightarrow Quick

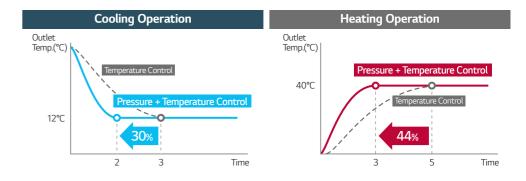
Running cooling and heating in a short time

\rightarrow Silent

LG has skills for running on a low noise mode

\rightarrow Circulation

LG has a ceiling fan to provide better comfort



Developer

Convenience

ThinQ™ and Remote Controller provide convenient control to customers

→ ThinQ[™]

Wherever & Whenever

→ Remote Controller
Setting by preferences







Dormitory Zone

PROPOSAL BY APPLICATION

FACTORY





In a factory, usually a large sum of money is spent on HVAC systems. LG provides a variety of air conditioning systems for a factory.

- All-in-one-Provider
- Operation Cost Saving
- Stable Operation



Owner



Owner

Insert a different text here. It is the same as top right. Avoid repetition



Research &

Development Zone

FACTORY



Owner

All-In-One-Provider

LG provides a total solution for all the necessary systems that a factory may need.

\rightarrow Total Solution

Space Heating & Cooling, Hot Water, Process Water, Control, Maintenance, Engineering Support



Owner

Operation **Cost Saving**

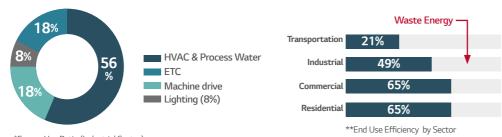
You can save money from factory utilities if you invest in an energyefficient product.

→ High Efficiency

If you use high efficiency products such as Multi V, Inverter Scroll Chiller, and Hydro kit, you can save annual fee for energy.

→ Waste Heat Recovery Solution

Since product efficiency has a limit, we need another source to save both energy and cost which is an energy reusable.



*Energy Use Ratio (Industrial Sector)

PROPOSAL BY APPLICATION

Owner

Stable Operation

LG solution provides a stable operation in all environments. and also that helps in decreasing manufacturing errors.

\rightarrow Back-up operation

In case of an error in the compression units, the back-up function avoids any brake in the functioning of the system

→ TMS(Total Management System)

By using Cloud server for monitoring, we do periodic inspections and visit service in a short time.

→ Instantaneous blackout compensation

After transient blackout, all systems are automatically returned right before conditions





Factory Operation Rate Production Quantity Critical Loss

Keep Operation

Quickly Respond

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 $[*]Source: U.S.\ Energy\ Information\ Administration, 2019.$

Values include natural gas, petroleum, electricity, renewable energy, and coal.

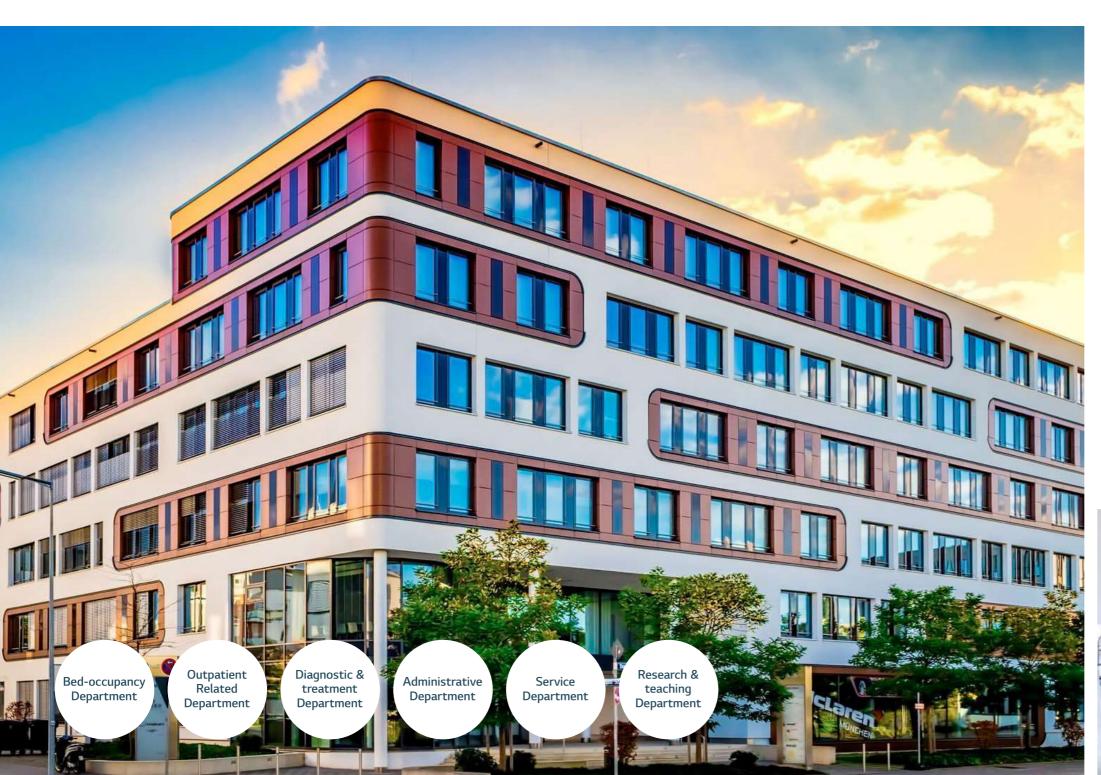
It includes the fields of Computer, Electronic products, Electric equipment, Automobiles, Transportation equipment, Furniture, Miscellaneous

**Source: Lawrence Livermore National Laboratory funded by the Department of Energy and UC Berkeley(2017)

PROPOSAL BY APPLICATION

HOSPITAL





Why LG?

Hospitals need to consider the necessary "healthcare attributes" that would eventually lead to an increased cost and design complexity. This in turn leads to delayed payback period and deteriorates investment efficiency.

Owner

- Cost & Design complexity
- HVAC design in hospitals
- HVAC requirements in the hospitals



Owner

With LG's healthcare products and systems, ideal hospitals can be built that reassures the necessary "healthcare attributes".



HOSPITAL



Owner

Air Purification

LG Dual Vane cassette Air purification function purifies indoor air by 5 phase filter.

\rightarrow Reusable Filter

Each filter can be reused just by washing without replacement.

→ Air Quality Status

It is easy to check air quality status with several devices (Indoor unit LED, Remote controller, Mobile)



^{*} Air purifying kit can be applied only with one of dual vane panel PT-AFGW0

Owner

Therapeutic Condition

Different temperature and humidity levels based on the requirement of the space.

\rightarrow Individual space control

Through the individual target condition (temperature, pressure, air quality, filtration) control by the indoor unit, it is possible to satisfy the design requirements.

\rightarrow DX ERV

ERV provides quick ventilation and saves energy through its heat recovery system.

PROPOSAL BY APPLICATION

Owner

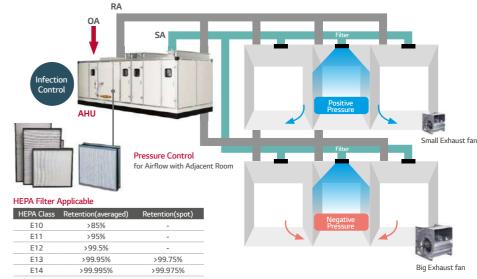
Infection Control

Filtration and control room pressure is necessary for blocking the infection.

\rightarrow DX ERV

E.S.P. value for each motor which are in charge of supplying and exhausting air respectively can be set individually to set the room pressure.

The AHU can control the temperature and humidity of the space, as well as being compatible with HEPA grade filters, and modulate the intake and discharge air volumes by diffuser design with exhaust fan to adjust the room pressure



^{*} Filter is selectable by the airflow rate s

Owner

Reliable Design & System

LG solution provides a reliable design & system for all kinds of hospital requirements

→ Better BIM support to confirm the design

Devise the best HVAC design for any project with LG engineering tools. LATS REVIT and CFD programs support the design work by visualization

→ Backup system

Inverter scroll chiller not only has basic backup function but it has a backup system integrated in it. In case of Multi V, basic backup function is applied. This features reduces the risk of malfunction.

→ Refrigerant Leak Detection

Leaking refrigerant can cause suffocation or explosion. Refrigerant leakage detector makes our space safer

070 | 071

PROPOSAL BY APPLICATION

HOTEL





Why LG?

Hotel is generally composed of social area and individual rooms. It needs to consider customers a ccording to the characteristics of each space. Moreover, Building a new hotel requires tremendous investment and long term commitment to maintain its sound condition. Owner looks for reasonable investment cost which will benefit their year-round business. Our HVAC solutions ensure customers' satisfaction.

Owner

Cost Saving

Safety

Comfort

• Increase Building Value

Consultant

- Design Convenience
- Increase Building Value
- Customer Satisfaction
- Safety



Owner

LG HVAC systems provide the best experience to your hotel guests.



Consultant

LG solution not only provides a pleasant and a comfortable indoor environment, but also offers a harmonious design with assured safety that doesn't interfere with the building's interior.



HOTEL



Owner

Cost Saving

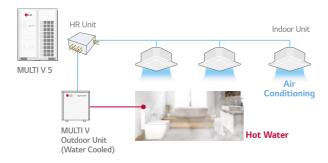
The hotel owner desires to minimize his overall yearly cost on investment, operations and maintenance

→ Investment cost saving (installation)

Multi V system is relatively simple, less components & installation time. Helps owner to save installation cost.

→ Operation Cost Saving

Multi V Heat Recovery system provides maximum efficiency with simultaneous operation. Our Hydro kit makes it possible to supply hot water with high efficiency.



→ Maintenance Cost Saving

Multi V system is relatively simple, so it is not necessary to have an expert person to handle the system and maintenance.



Owner

Pleasant Environment & Safety

Satisfied guests and their excellent hotel stay experience starts from their safety and a pleasant room atmosphere

→ Safety from refrigerant

Ensure customer's safety with real-time refrigerant leak detection

→ Low noise operations





→ Hotel-oriented control system

Guest room control by check-in and occupancy status

Consultant

Easy & Flexible Design

→ An applicable and differentiated solution that considers different spaces' characteristics

Guest room : Compact size duct type indoor unit Lobby (High Ceiling / Volume) : DX AHU

Various application solution that can be applied other space (Laundry, Kitchen, Etc.)





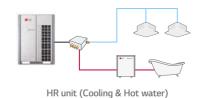


ightarrow Advanced Engineering tool that supports an easy design

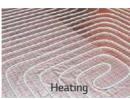
Easy model selection by LATS HVAC / CAD / Revit Air flow analysis by CFD Energy simulation by LATS Energy / Energy modeling tool

ightarrow A solution that provides cooling/heating as well as a hot water supply without the conventional hot water system.

Hot water supply by Hydro Kit System







PROPOSAL BY APPLICATION

ACADEMIC INSTITUTION





Why LG?

General School is composed to common area and individual class rooms. It needs to consider students according to the characteristics of each space. Our HVAC solutions provide satisfaction to customers.

Customer

- High Installation Reliability
- Convenient Installation
- Installation Cost Saving
- Maintenance & Service

- Securing Student's Health
- Securing Student's Hygiene
- Control Management



Owner

- Improving Student's Concentration
- Reducing Operation Cost

Customer

Cafeteria

LG HVAC provides appropriate solution to customers and also supports all the processes from installation to maintenance.



Control Room

Owner

Class Room

Clean air is one of the most important factor for Educational buildings. LG HVAC can provide highly suitable solution for schools..



ACADEMIC INSTITUTION



Contractor

High Installation Reliability

Increased installation reliability through various design tools and CFD analysis.

- \rightarrow LATS CAD & Revit, HVAC
- \rightarrow CFD Analysis
- \rightarrow Expanded piping capabilities
- IDU-IDU: 40m, ODU-IDU: 110m



Contractor

Installation Cost Saving

LG Air conditioner reduces installation cost.



- → Outdoor unit capacity range
- \rightarrow Default drain pump In low static duct
- → Air purification kit
- No need additional air purifier
- \rightarrow Central Controllers
- Max. indoor units

	9// 3 3/3 2/4/10/20/20/20 2/4/20/20/20/20/20/20/20/20/20/20/20/20/20/	B 0 0	01111	
	AC Ez	AC Ez Touch	AC Smart 5	ACP 5
LG	32	64	128	256
A co.	16	64	64	64

Contractor

Convenient Installation

Easy installation reduces installation time.

- \rightarrow Slim body height indoor unit
- 4Way cassette : 204mm, 288mm
- Low static duct : 190mm



- \rightarrow Compact size VRF outdoor unit
- Low Foot print area, weight
- \rightarrow Round Shape Cassette
- One sided piping
- Outside Control Box
- \rightarrow Stopper valve





Contractor

Convenient Maintenance & Service

Provides state-of-the-art technology for high reliability solutions in different environments

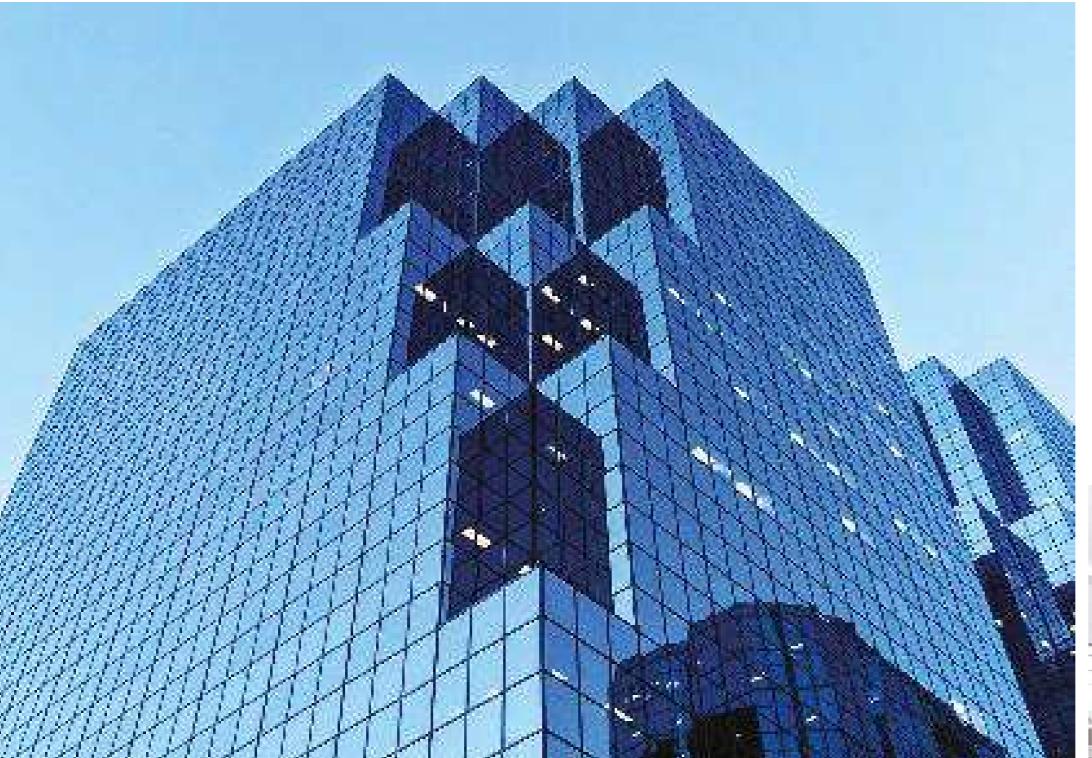
- \rightarrow During use small letters and not capitals
- Pump down & Pump out
- \rightarrow Central monitoring and risk management (TMS)
- AC Manager 5, ACP 5, AC Smart 5, AC Ez touch
- ightarrow LG Service application
- Error Code & Trouble shooting
- Technical Bulletin



PROPOSAL BY APPLICATION

OFFICE





Why LG?

Time and cost saving is very important for a contractor. LG solutions provide advanced products for offices.

Contractor

Save Cost

- Large Capacity Outdoor Unit
- Air Purification Kit
- Anti Corrosion Black Fin II
- Less Device, More Control

Convenient Installation & Maintenance

- Easy Installation with Compact Indoor Unit
 Easy Installation of Indoor Unit
 Large Range of EEV Kit
 Convenient Service

High Installation Reliability

- LATS CAD & Revit, HVAC
- Energy ModelingCFD Analysis



Contractor

Time and cost saving is very important for a contractor. LG solutions provide advanced products for offices.



OFFICE



Contractor

Save Cost

Cost saving by efficient cost use.

- \rightarrow Large capacity outdoor unit
- 1 Unit Max 26HP
- Up to 23% reduction in installation area (based on 260HP)
- \rightarrow Air purification kit
- No need for an additional air purifier
- \rightarrow Anti corrosion Black Fin II
- Installation of more 300m from the coast without additional coating
- Test by TUV



\rightarrow Less device, more control

- Control more indoor units with one central controller



PROPOSAL BY APPLICATION

Contractor

Convenient **Installation &** Maintenance

Save time with easy-to-install products.

- ightarrow Easy Installation with compact indoor unit
- Small space Installation with Slim Height
- \rightarrow Easy installation of indoor unit
- One sided piping & Outside Control Box
- One push panel & sliding corner
- Convenient E.S.P Setting
- High Ceiling Mode

\rightarrow Large range of EEV kit

- Available up to 168kW
- Easy piping and wiring during installation



\rightarrow Convenient service

- Mobile Service app.
- Mobile LGMV
- Cycle Monitoring View



Contractor

High Installation Reliability

Increased installation reliability through various design tools and CFD analysis.

- ightarrow LATS CAD & Revit, HVAC
- → Energy Modeling
- \rightarrow CFD Analysis



082 | 083

RETAIL SPACE CONTROL SOLUTION





Design Proposal





Maintenance Office





BMS Integration

(BACnet IP, Modbus TCP)

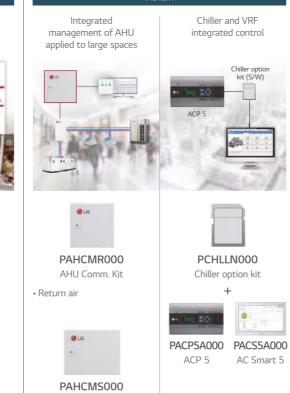
(BACnet IP, Modbus TCP)



PQNUD1S40

PDI Premium (8 port) • Max. 128 IDU





AHU Comm. Kit

• Discharge air

PROPOSAL CASE

RESIDENTIAL CONTROL SOLUTION





Anytime, anywhere air conditioner control and access



Integrate systems

for smart connectivity throughout



Bed Room

Use a familiar residential thermostat



Simple interlocking control by remote control



Apartment / Residence

Stable system operation

Simple interlocking

control by remote control

-21

PREMTB100

Wired remote controller

• 4.3 inch color LCD

Touch button

Radiator



Design Proposal

Control your home air conditioner anytime, anywhere







PWFMDD200 LG Wi-Fi modem

Function

- On / Off
- Fan speed
- Operation mode
- Vane control

• Error check

 Reservation (Sleep, Weekly On / Off)

Build a Smart house





PDRYCB500 Modbus RTU (9,600bps)

Function

- Operation
- Indoor temperature
- · Error alarm
- Set operation mode
- Set temperature
- Set fan speed

Operation mode (Fan / Heat / Cool)

 Fan speed (Low / Middle / High)

Universal Input*

• Operation On / Off

Thermo On / Off

Output

Input

• Operation On / Off status

PDRYCB300

PDRYCB320

8 contact point

Use a familiar residential

• Error alarm

Stable system operation when indoor unit power is lost





Independent power module

• EEV full close function



BUSINESS

PROPOSAL CASE

HOTEL CONTROL SOLUTION

HOSPITAL CONTROL SOLUTION







Monitor the comfort level for each



Control fan speed and air volume



Energy savings based on flexible



Centralized management of AHU for



Design Proposal

PROPOSAL CASE

Proper airflow management for patients



PTVSMA0

Human detection sensor

21 0

PREMTB100

• 4.3 inch color LCD

Touch button

Hospital Ward





PDRYCB400

2 contact point

• Operation On / Off status

• Operation On / Off

Output

• Error alarm

External device

interlock control





PACS5A000

AC Smart 5 BMS Integration Input



PACP5A000 ACP 5

BMS Integration (BACnet IP, Modbus TCP)

Service Zone

Energy savings based on flexible scheduling





PACS5A000 AC Smart 5





PACP5A000 ACP 5

• BMS Integration (BACnet IP, Modbus TCP)

Centralized management of AHU for large space





PAHCMR000 AHU Comm. Kit

• Return air



PAHCMS000 AHU Comm. Kit

· Discharge air

Air conditioner automatically switches off when guests depart

Guest Rooms



Integrated control of air conditioner with the hotel room controller



Air conditioner can be controlled with existing hotel thermostat



Prioritizes guest safety with refrigerant leak detection



Reception

Air conditioner control in conjunction with check-in or check out



Public Areas

Centralized management of the public areas

Design Proposal

The air conditioner automatically turns off when guests leave



PDRYCB400

2 contact point

• Operation On / Off status

• Operation On / Off

Input

Output

Error alarm





PDRYCB500

Modbus RTU (9,600bps)

Function

Operation

• Error alarm

• Set run mode

• Set fan speed

• Set temperature

Indoor temperature



PDRYCB300

PDRYCB320

8 contact point

Input

Output

• Error alarm

Universal Input*

• Operation On / Off

(Fan / Heat / Cool) Fan speed

(Low / Middle / High)

· Operation On / Off status

• Thermo On / Off

Operation mode



Guest safety is



Air conditioner control

in conjunction with



PACS5A000 AC Smart 5

 BMS Integration (BACnet IP, Modbus TCP)



PREMTB100

- 4.3 inch color LCD
- Touch button

• 6,000ppm



111

PRLDNVS0

Refrigerant leakage detector



 BMS Integration (BACnet IP, Modbus TCP)



PROPOSAL BY APPLICATION

ACADEMIC INSTITUTION CONTROL SOLUTION





Central controls

prevent students from

Classroom

Automatically save energy in the absence of students



Central controls prevent students from arbitrary control



Lecture Hall

Schedule management according to academic plan



Maintenance Office

Integrated management of distributed buildings



Centralized management with multiple interfaces



Design Proposal

Automatically save energy in the absence



Lecture Room

Schedule management according to academic plan







PTVSMA0 Human detection sensor



PREMTB100 Wired remote controller

- 4.3 inch color LCD
- Touch button



PACS5A000 AC Smart 5

• BMS Integration (BACnet IP, Modbus TCP)



PACP5A000 ACP 5

• BMS Integration (BACnet IP, Modbus TCP)



AC Manager 5

PACM5A000



PROPOSAL BY APPLICATION

PROPOSAL CASE

OFFICE CONTROL SOLUTION

throughout the building BMS system Office Room

Energy savings and management



Integrated management of HVAC with



Reduce costs by replacing BMS





Reasonable power distribution to tenants



Server Room

24-hour backup management



Meeting Room

Energy savings based on occupancy detection

Server Room

Main equipment

24 hours back up

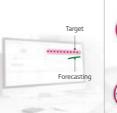
management



Design Proposal

Energy savings and management

throughout the building



PACS5A000

AC Smart 5

(BACnet IP, Modbus TCP)

PACP5A000

ACP 5

(BACnet IP, Modbus TCP)

• BMS Integration

• BMS Integration

Integrated management of HVAC with BMS system





Maintenance Office



PLNWKB000 LonWorks gateway



PMBUSB00A

Modbus RTU gateway













PEXPMB300 PEXPMB200 PEXPMB100 ACU IO Module



Reasonable power distribution to tenants





PQNUD1S40

PDI Premium (8 port)

• Max. 128 IDU

PPWRDB000 PACS5A000 PDI Standard (2 port) • Max. 128 IDU



AC Smart 5



PACP5A000 ACP 5

BMS Integration (BACnet IP, Modbus TCP)



Energy savings based on occupancy detection





BUSINESS

PROPOSAL BY APPLICATION



PTVSMA0 Human detection sensor



PREMTB100 Wired remote controller

• 4.3 inch color LCD Touch button



BECON_™ building solution



Innovative building management solution in your hands. Our optimized solutions provide integrated control for customers configuration of various equipment in a building and provides an intuitive interface to maximize operational efficiency.



ENERGY REDUCTION

BECON Building Solution performs automatic control of energy accurately by perfect interlocks with building equipment.



CONVENIENT SYSTEM

BECON Building Solution gives exact information through intuitive interface.



INTEGRATED SOLUTION

BECON Building Solution supports customized site solution, to manage equipment and control system.



INTRODUCTION OF BMS BECON building solution



BECON Building Solution integrates all equipment of a building into a single platform. It allows flexible and consolidated control, interworking with different systems.





INTEGRATED CONTROL CENTER

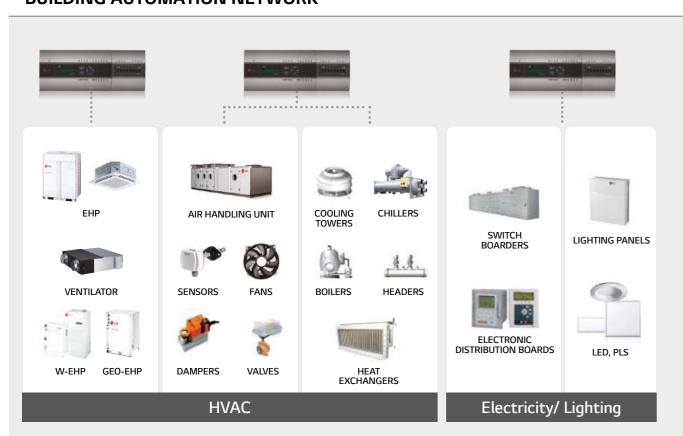


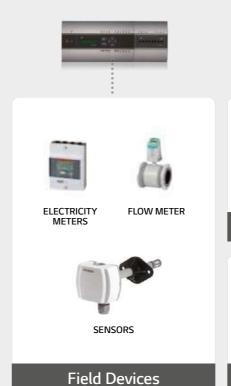
BECON MANAGER



BECON ENERGY

BUILDING AUTOMATION NETWORK









Integrated Monitoring / Space Explore / Facility Structure /Combined Analysis Tool Innovative and streamlined GUI at a glance, and category-specific movement for convenience in one hand! With BECON manager, you can meet/face a whole new world with unprecedented building systems you've never experienced before.















WIDE PROTOCOL INTEROPERABILITY







BECON_™ manager





Integrated Monitoring

You can check the key contents of each user at a glance. You can monitor the trends of key control points without entering menus.



Custom Integrated Monitoring

BECON manager provides the optimized browsing and quick control with the convenient inter-floor movement and view transition without moving into other menus.



Space Explorer / Equipment Structure Diagram

BECON manager delivers efficient integrated control finding suitable display with easy interlink function among views.



Quick and Easy Space Explorer / Facility Structure

Users enable to browse and move the information of each floor through mouse wheel and over. It is available to access the targeted facility information by quick and easy views switching and to select and control various facilities en bloc.



You can compare the control point trend with space information easily and accurately. The alerts and reservations referring to the history of user actions are indicated as colored icons in the time-series for a quick site check.



Time / Space Timeline

Timeline is connected to the space explorer and equipment structure diagram to combine them into one space and time for comparison.

Key History Display

Timeline displays alerts, errors, reservations, and user action history for accurate identification of issues.



Multiple View

BECON manager delivers efficient integrated control finding suitable display with easy interlink function among views.



Consecutive Multiple View

It is available to promptly connect the link of displays in terms of main functions such as Integrated Monitoring, Space Explore, Facility structure, Combination Analysis Tool, Timeline, and Warning Alert etc.

INTRODUCTION OF BMS BECON manager





Combined Analysis Tool

With functions to conduct fast conditional search and identify results for possible issues, required time to resolve the issues is reducing. You can make a cross-search on one screen for all control point to identify all equipment with issues thoroughly.





Convenient Combined Analysis Tool

The combined analysis tool identifies the condition of multiple pieces of equipment at the current speed and provides a function of searching for them by type / condition.

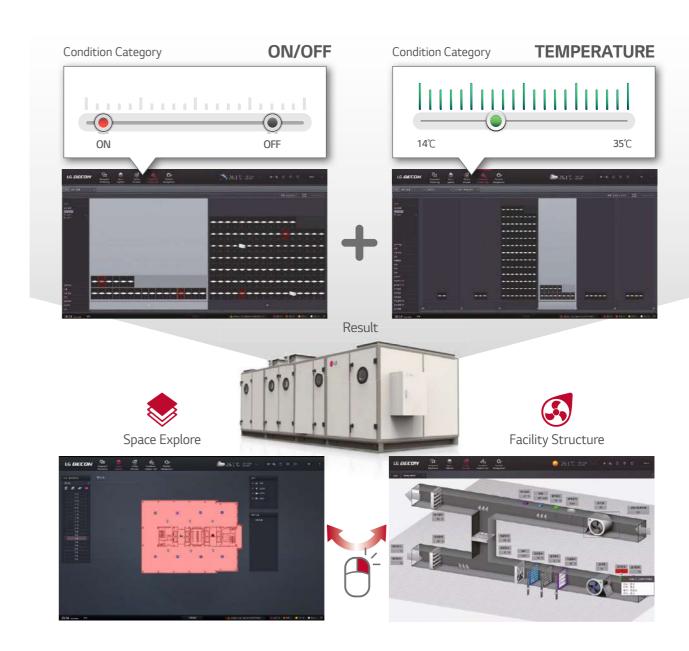
Search Condition Categories

All equipment: Search for properties of all equipment (except for lighting)

Specific equipment: Search for particular types of equipment based on detailed criteria (except for lighting)

Lighting: Search condition for lighting by building and floor, search result indicate key properties of lighting

Floor: Search condition for all equipment by building and floor (except for lighting)



Searching and Setting Filters

Sparching

After set and input conditions, results are displayed.

Filter Settings

After selecting a property, number of corresponding properties appears

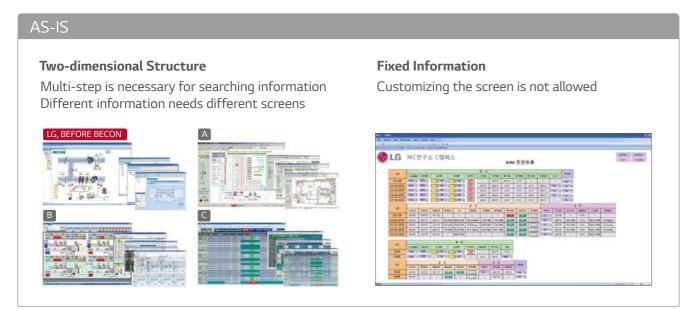
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INTRODUCTION OF BMS BECON manager





BECON Manager Features





BECON MANAGER

Three-dimensional structure

Customizing the screen is not allowed





Intuitive access for floors and facilities (Analyzing status of each floor and facilities)

Dashboard

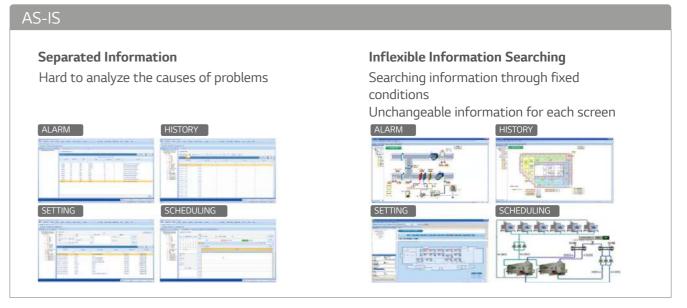
- -Setting important items for decision making
- -Setting customized items for building managers



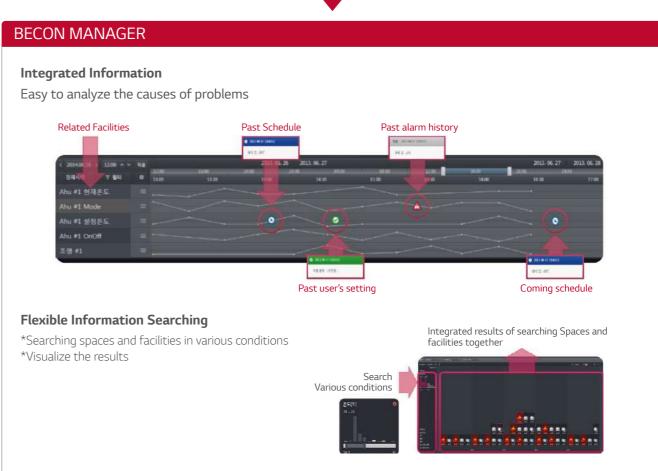


Choosing items

Setting items







BECON_™ energy



OPTIMIZED ENERGY MANAGEMENT REFLECTING PAST, PRESENT, AND FUTURE

BECON_mEnergy

Energy Scan / Target Management / Diagnostic Analysis / Optimized Control

This is a building energy navigator that shows and implements an optimized energy. Its management plan is based on the overall judgement of the energy status.



ENERGY DASHBOARD

Effective visualization of the overall energy consumption status



OPTIMIZED CONTROL

Energy saving / comfort level simulation based on energy consumption prediction and one-click operation for easy and direct energy saving efforts



DIAGNOSIS / ANALYSIS

Diagnosed abnormal conditions based on energy consumption and equipment operation history analysis









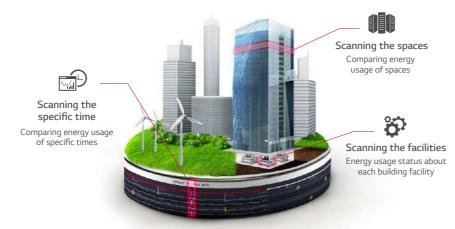
BECON_™ energy





Dashboard / Energy Scan

Areas consuming much energy in the building are identified for energy scan or optimized control screen directly. This is a function that shows the energy consumption status by heat source system, space, equipment, etc. Here, you can see the trend graph/stacked graph and compare consumption of different spaces and times.



Visualization of energy usage

- A function that shows energy consumption status by Energy consumption status of a particular date heat source, system, space, equipment, etc.
- Offering energy trend chart and accumulated energy usage graph

Energy usage by specific time and spaces

- comparison and comfort index provided
- Energy consumption status compared and comfort level index provided for a certain space



Diagnosis / Analysis

This is a function that analyzes the operation conditions by space / equipment based on past statistical data to detect abnormal patterns and identify the root causes of issues.



Equipment abnormally diagnosis & cause identification

It finds problematic spaces and facilities by sensing abnormal pattern of energy usage.



Target Management / History Management

INTRODUCTION OF BMS

This is a function that lets the user set the yearly / monthly target energy consumption to facilitate energy consumption management as per the target.



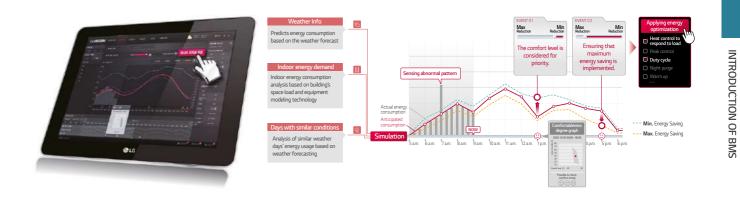
Energy target and cost management

It provides statistical predictions based on the past data and helps you manage goals by space/energy source.



Optimized Energy Control

This function predicts the energy consumption / comfort level based on the weather information, previous year's consumption, and the indoor energy demand among other factors and control the conditions optimally. The operator can realize energy saving based on the building's operation environment and business objects.



BUSINESS

BECON_™ energy



Differentiated Graphic User Interface

IDEA Communication Design Winner

IDEA, RedDot, and iF are world's three major design awards. IDEA's Finalist and RedDot's Winner has proved the design excellence of BECON solution.





BECON Manager

An overview of the conditions of related facilities can be used for faster action control with their history information shown on the timeline



Space Explorer provides easy-to-use browsing and quick control with the convenient inter-floor movement and shows transition without moving into other menus



INTRODUCTION OF BMS

INTRODUCTION OF SVC BIZ

INTRODUCTION OF ENERGY PACKAGE

Red Dot Communication Design Winner

Red Dot Communication Design Winner

IDEA, RedDot, and iF are world's three major design awards. IDEA's Finalist and RedDot's Winner has proved the design excellence of BECON solution.







BECON Energy

Overall monitoring of building energy usage and easy check of energy overuse by colored area. Visualization for energy consumption status

Energy saving through optimized facility control. Predicting future energy usage and indoor comfort level





BECON[™] HVAC solution



Thorough Control of the Entire Building **BECON**_™ Controller

BECON Controller

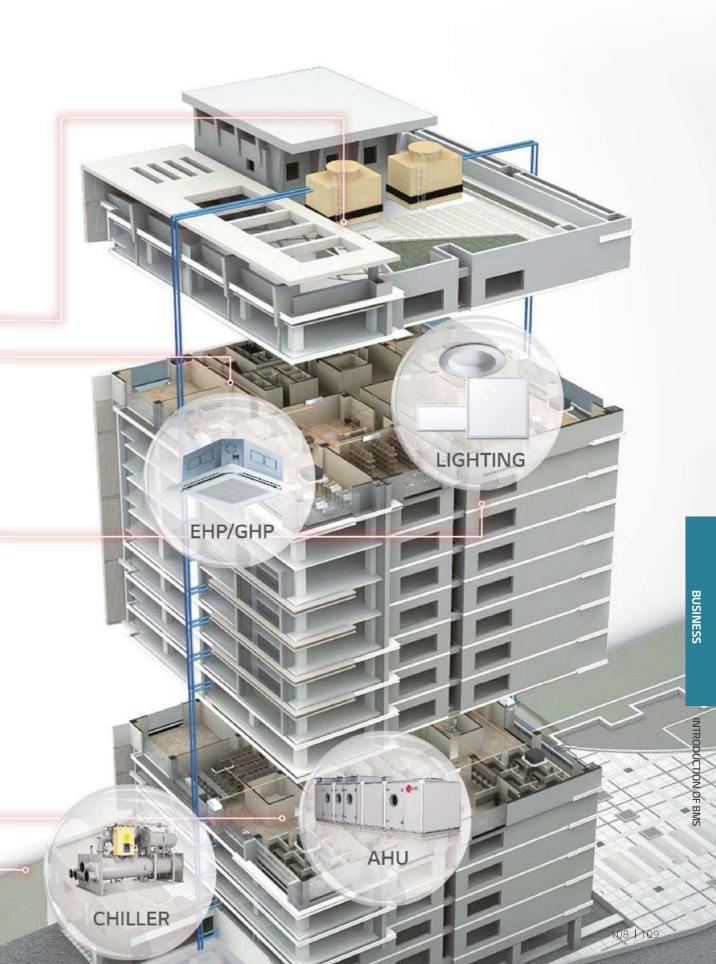
This high performance direct digital control device is the core element of the BECON Building Solution that manages control points throughout the building. Since the energy logics are embedded and the module structure is expandable according to the size of the building, you can control any type of building.



Seamless Building Equipment Control

Economical Controller customized any type of the building

PROPOSAL BY APPLICATION INTRODUCTION OF BMS INTRODUCTION OF SVC BIZ. INTRODUCTION OF ENERGY PACKAGE





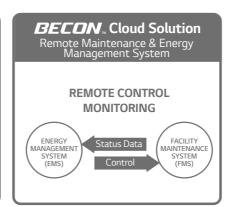
Composition of

BECON_M HVAC Solution

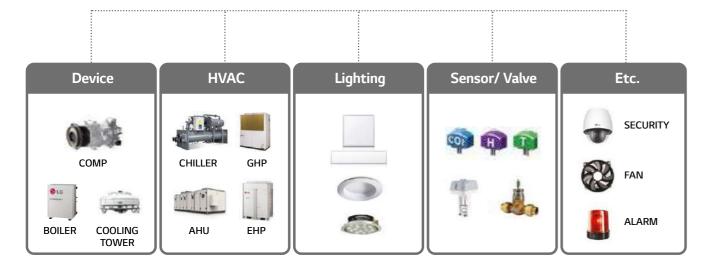
Product Range





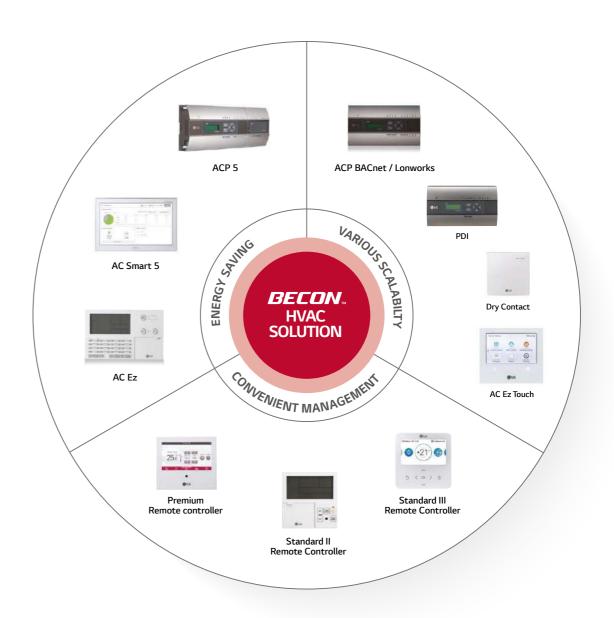






Product Range BECON HVAC Solution

INTRODUCTION OF BMS





ENERGY SAVING

Peak control, electricity savings by monitoring schedule and energy



CONVENIENT MANAGEMENT

Easy access and convenient use



VARIOUS SCALABILITY

Control LG HVAC product and 3rd party product by Dry contact, IO module, BACnet, Lonworks etc.

INTRODUCTION OF BMS

BECON_m HVAC solution



Composition of **BECON**_™ CLOUD

Remote Integration Management Solution Based on Cloud



OPOSAL BY APPLICATION INTRODUCTION OF BMS INTRODUCTION OF SVC BIZ. INTRODUCTION OF ENERGY PACKAG

Customer Value

Quick and convenient HVAC services are offered through total remote maintenance solution.



PEED

User inconvenience is minimized by guaranteeing on-site visit within 12 hours



ECONOMY

Service cost is reduced with remote maintenance. Energy is saved with optimized efficiency and energy logic



CONVENIENCE

Air conditioners are remotely managed or controlled from anywhere, anytime



PLEASANTNESS

Healthy interior conditions are secured 365 days a year through complete cleaning overhaul



SERVICE APPLIES



The manufacturer provides the service directly to LG's overall system and it's parts of air conditioning products.

With unique technology and solutions, LG Electronics is expanding it's position with constant research, technology development and technology exchange for optimum heating and cooling solutions.

The manufacturer provides the service directly to LG's overall system of air-conditioning products.



From parts supply to cleaning, LG Electronics' total HVAC system is directly provided by the manufacturer.

Engineering services based on R & D and engineering



We remove proven high-quality technical services through engineers that are given regular technical trainings.

Accurate and rapid process using smart diagnostic kit



We analyze data with professional diagnostic equipment the fastest and the most efficient service when trouble occurs.

emote maintenance service base on BECON cloud

LG **BECON**_{TM} Cloud

ICT based remote maintenance systems enable real-time remote management and control and maintenance services.

We provides optimal HVAC total solution service for various customer needs and installation requirements from individual air-conditioning to central air-conditioning.

From central HVAC to individual HVAC, we offer various and differentiated service management for each product. We are able to respond to various customer's needs accurately and quickly by establishing technical cooperation with LG Electronics Research Center, developing professional engineers through expert technical prestige system, analyzing product performance S / W and equipment system.

CHILLER



Large building and industrial central HVAC system

Centrifugal chiller
Water-cooled screw chiller
Air-cooled screw chiller
Inverter scroll chiller
Absorption chiller

MULTI V.



System air conditioner for medium and large buildings

MULTI V SUPER 5 MULTI V SUPER IV MULTI V SPACE III MULTI V S MULTI V WATER IV MULTI V GEO

MATERIALS SALES



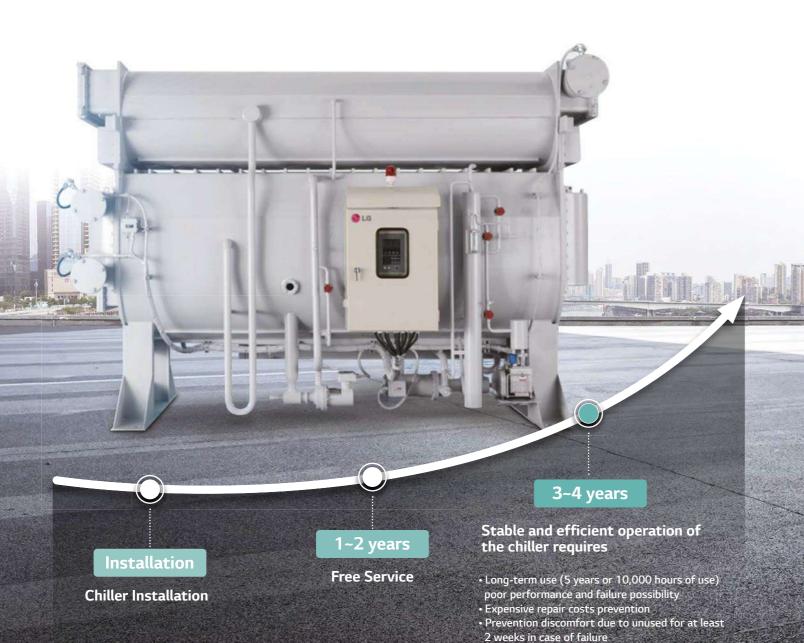
Sales of materials and parts

Piping / Insulation / Electrical Materials Outdoor unit efficiency guide Wind guide HIGH QUALITY HVAC SERVICE & MAINTENANCE

CHILLER SERVICE & MAINTENANCE



If the chiller is used for a long time, its performance will degrade and lead to poor durability. In the event of faults, Not only does it cost high, but it also takes at least two weeks to repair, so regular maintenance and diagnostics are essential to maintain the performance of the chiller and reduce cost.



Compressor Overhaul Features

By preventing compressor overload operation, it is possible to prevent secondary accident and wastage of electric power consumption by normalizing performance of the equipment.

Secondary accident prevention by replacing, check of each important parts



Increase durability of equipment by normalizing compressor function

Emergency dispatch in case of accident (at periodic inspection contract)



SVC action within 24 hours service in high season / within 12 hours in low season

Improve performance by normalizing compressor impeller function



Improved performance minimize cost loss due to waste of energy

Chiller operation management consulting and training



Increase management efficiency by implementing product structure and operation management training

CHILLER SERVICE & MAINTENANCE



Necessity of compressor overhaul

Equipment that has been used for a long time may have insufficient motor insulation or wear of rotating parts may be caused by secondary products due to oil deterioration, carbonization, etc, thus performing overhaul operations to prevent secondary accidents prevent energy wastage and cost loss.

Service Provided Directly by The Manufacturer

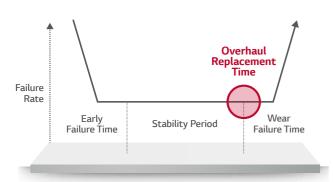
- Secondary accident caused by major parts wear of compressor
- It takes about 30 days to repair so the equipment can not be started
- In the event of a failure, the repair amount is higher than the repair cost

Performance And durability Degradation

- · Aging of equipment due to wear of core parts
- Inefficient operation of chiller due to poor compression capacity
- Energy waste and cost loss due to inefficient operation of chiller

Decreased Manageability

- Major accidents such as not being able to operate equipment in case of secondary accident
- Large claim occurrence and long time requirement in case of failure
- · Difficulty in planning an annual budget for replacement parts



5 years, 10,000 hours

Usage Time



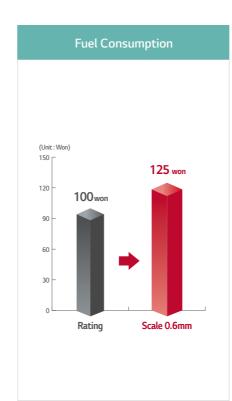


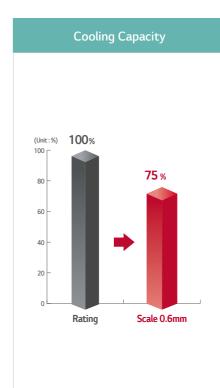
Bearing part wear Impeller wear

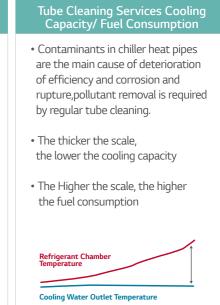
Pinion shaft wear

Necessity of tube cleaning

Contaminants in chiller heat pipes are the main cause of deterioration of efficiency and corrosion and rupture, pollutant removal is required by regular tube cleaning.



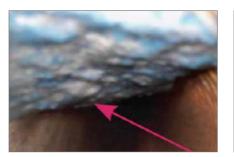




Heat transfer pipe pollution photo

Scale generation in the heat transfer pipe of a heat exchanger can result in significant energy wastage due to the heat transfer pipe frozen and performance degradation.







CHILLER SERVICE & MAINTENANCE



Tube cleaning methods and features

Tube cleaning can be performed in two ways-mechanical and chemical cleaning. It is done based on the quality of cooling water and the internal scale of the heat transfer pipe, which is removed with LG authorized tube cleaning.

Tube Cleaning Method Per Product

• Mechanical cleaning:

Customized method for site with good cooling water quality

• Chemical cleaning:

If the water quality of the cooling water is not good or the contamination inside the heat transfer pipe is severe

• Mechanical and chemical cleaning:

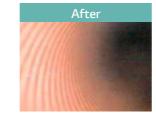
If the quality of the cooling water is poor or the inside of the heat transfer pipe is very polluted

Classification	Chemical cleaning	Mechanical cleaning	mechanical / chemical	Total
Absorption	80%	10%	10%	100%
Screw	10%	10%	80%	100%
Turbo	10%	10%	80%	100%

- Prevention waste of electric energy by increasing heat exchange efficiency
- Prevention of secondary accident by preventing compressor overload operation
- \bullet Prevention of secondary accident such as bearing by preventing oil temperature rise

Before Cleaning / After Cleaning





Before Heat transfer pipe cleaning

After Heat transfer pipe cleaning



Before Waterbox cleaning



After Waterbox cleaning

Necessity of regular check

After the product is installed, it can be costly due to secondary accidents and performance degradation depending on the installation environment, usage habits and inspection level. Therefore, periodic inspection is necessary after commissioning to ensure durability, efficiency and prevent damage to core components.

Management Difficulty

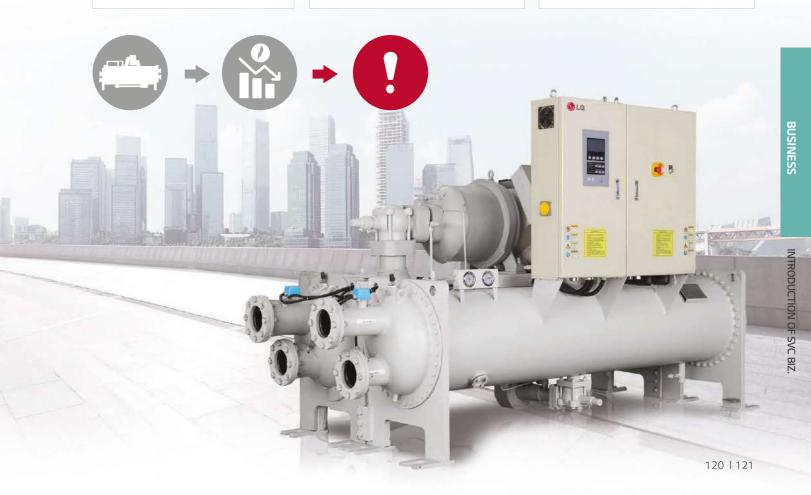
- Major accidents such as not being able tooperate equipment occur in case of secondary accident
- Claims occur in case of nonemergency response in failure
- Difficulty in efficient management due to lack of knowledge about equipment

Performance Degradation

- Performance degradation due to abnormal operation of supplementary equipment
- Performance degradation due to refrigeration cycle abnormality
- Performance degradation due to refrigerant system abnormality

Secondary Accident Damage

- Loss of core parts such as bearings due to lubrication system abnormality
- Loss of core parts such as motor due to refrigerant system abnormality
- Loss of core parts due to safety Instrument device abnormality



CHILLER SERVICE & MAINTENANCE



Features of Periodic Check

By regularly checking the chiller whether it is economical and reliable, and it is possible to improve the COP by preventing secondary accident.

> Service provided directly by the manufacturer



Secondary accident prevention of core parts such as compression bearings and motors

COP degradation



Blocking cause item of refrigerator

Prevent waste of energy by normalizing cooling cycle

Emergency action in case of an accident



SVC action within 24 hours service high season / within 12 hours in low season

Chiller operation management consulting and training



Increase management efficiency by implementing product structure and operation management training

Regular Check Items

Monthly regular and diverse professional inspections prevent product failure and maintain performance.

lassification	Product List	Necessity and Expected Effect	
	Operation data check	Check refrigeration cycle, various sensor values normal status, condenser scale, refrigerant leakage, etc	
	Appearance check of equipment	Check product appearance damage, oil leaks and refrigerant leaks	
	Vibration check	Check bearing condition and balancing of rotor	
	Lubrication system check	Oil condition and bearing temperature check (prediction) to prevent secondary core component failure	
General	Partial refrigerant	Check oil cooler, dry filter abnormality check	
	cooling system check	Rotor balancing and bearing status, impeller wear status check	
	Noise check	Visual check of the impeller (* IGV opened) to prevent failure of compressor core parts	
	Impeller check	Check whether capacity control device is normal through electrical and manual check	
	*IGV operation status	Check whether there is proper refrigerant amount and refrigerant leakage	
	Refrigerant pressure check	Check bearing condition and balancing of rotor	
	Report provide	Periodic check reports and maintenance Binder provided	
Differentiation	Emergency service response	Action in 12 hours in low season / in 24 hours in high season	
	Additional facilities check	Check pump, header, cooling tower, air conditioner, diffuser, etc	
	Energy diagnosis	Provides current performance measurement and consultation relative to chiller rating	

*IGV: Inlet Guide Vane

Preventive Maintenance Features

Chiller Major replacement parts must be replaced after a certain period of time to ensure stability and performance through the preventive maintenance.

Prevent secondary accidents by replacing each important part and check



Secondary accident prevention of core parts such as compression bearings and motors

Emergency action in case of accident (under periodic check contract)



SVC action within 24 hours service in high season / within 12 hours in low season

Increased performance by COP affected parts replacement and check



Prevent waste of energy by normalizing cooling cycle

Chiller operation management consulting and training



Increase management efficiency by implementing product structure and operation management training

Preventive Maintenance Item

Monthly regular and diverse professional inspections prevent product failure and maintain performance.

Classification	Product List	Necessity and Expected Effect
	Oil replace	Prevention of secondary accidents of core parts by preventing oil carbonization
	Oil filter replace	Debris in the body accumulates in the filter, requiring periodic replacement (Oil circulation is not good)
	Refrigerant filter replace	If the refrigerant filter is clogged, it will cause poor performance due to poor oil recovery and prevent secondary accident (Flooded chillers)
	Safety check	As a national recommendation, it should be done once / year and check whether the safety valve is operating normally
Inspection	Compressor motor coil insulation	If the inner coil insulation of the compressor is broken, it can not be operated and can lead to secondary accidents.
	Refrigerant leak test	Leakage of refrigerant may cause deterioration of performance as well as motor temperature may rise and lead to secondary accident
	Each part safety device	Secondary accidents(Compressor, frozen, etc.) may occur when the microcomputer setting value do not work properly
	Oil heater replace	Maintain oil temperature within normal range to prevent secondary accidents
Differentiation	Operation Management Training	Production factory tour (product manufacturing process training, operation management training, etc.)Training execution (regular inspection + maintenance site)
	Energy Diagnosis	Provide current performance measurement and precision diagnosis and consultation with the rated performance of the chiller(regular inspection + maintenance site)
	Operation Data Analysis	Operational data can be analyzed and diagnosed for up to one year in the past through USB only for LG
	LG MV	Precise diagnosis possible with refrigerated cycle check tool only for LG

INTRODUCTION OF SVC BIZ

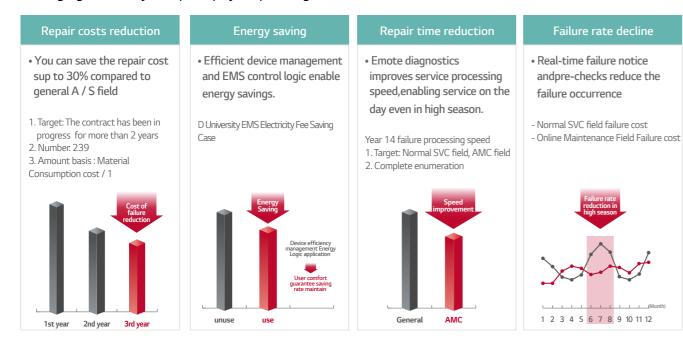
Offline Online + Offline

MULTI V SERVICE & MAINTENANCE



Necessity of Multi V Maintenance

We provide services to manage products conveniently through *ICT-based total HVAC maintenance system. This saves energy and we achieve customer's satisfaction by maintaining product performance, managing efficiency and promptly responding to faults.



Cleaning Service

Fungi and germs that are harmful to the human body are likely to accumulate inside the air conditioner. If it is not cleaned and managed for a long time, it will accumulate pollutants, which may lead to lower cooling efficiency and cause disease thus regular cleaning from a professional is essential.



Multi V Maintenance Package

Diverse and professional maintenance product makes continuous product improvement activities and performance better.

pack	Online + Offline Maintenance package	
	2 T3	
	•	
	•	
•		

INTRODUCTION OF SVC BIZ

BECON CLOUD SERVICE



BECON Cloud Service

The BECON Cloud system, which manages all areas from remote management to control and maintenance, is able to monitor in real time anytime and anywhere, so it is easy to prevent malfunctions and offers optimal product management solutions such as excellent energy saving, differentiated service and consulting.



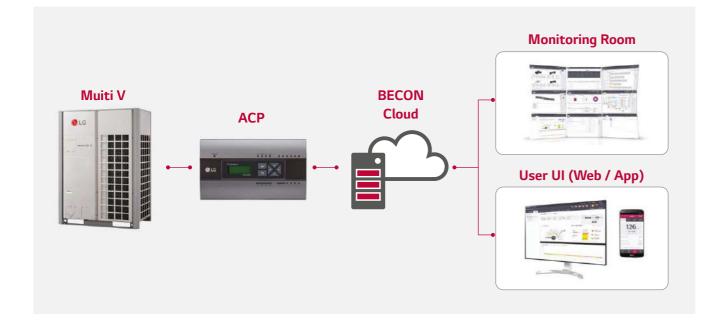
01 Block Diagram

02 Main Function

03 Customer offering Value

BECON Cloud Block Diagram

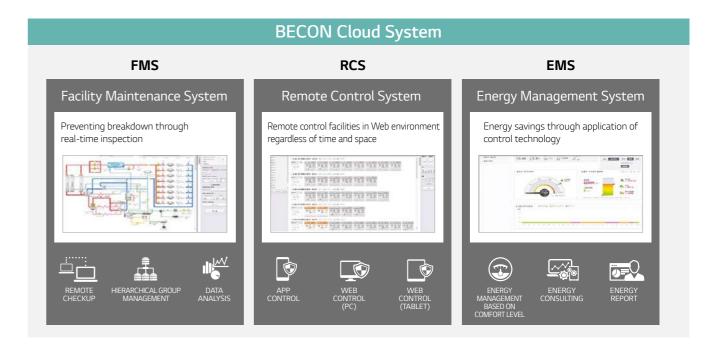
ICT-based comprehensive HVAC management system that provides energy savings through remote systems as well as convenient management is total HVAC management solution.



OPOSAL BY APPLICATION INTRODUCTION OF BMS INTRODUCTION OF SVC BIZ. INTRODUCTION OF ENERGY PACKAG

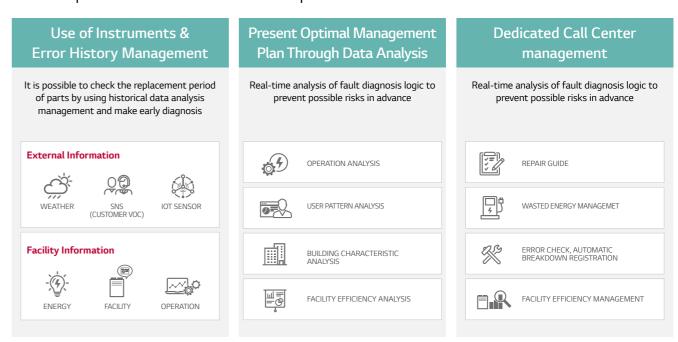
BECON Cloud System

BECON Cloud consists of Facility Maintenance System(FMS), Remote Control System(RCS), Energy Management System(EMS).



Customer Offering Value

Device usage and error history can be managed through systematic and efficient management, Data analysis can prevent possible risks beforehand, and the chiller can be checked regularly every month to prevent malfunctions and maintain performance.





LG INNOVATION IN ACTION

Our complete solution at a glance

From efficient, premium-designed solar modules on the roof to a smart energy storage system on the ground floor. The LG Smart Home Energy Package can be perfectly integrated into all types of houses. Produce your own energy from renewable resources, store it in the battery or water tank, and enjoy a comfortable and sustainable home while cutting your electricity bills comfortably and sustainably.



PV Solar Modules



Energy Storage System (ESS)



Air-to-Water Heat Pump (AWHP)





LG SMART HOME ENERGY PACKAGE IN EVERYDAY LIFE



1:00 pm:

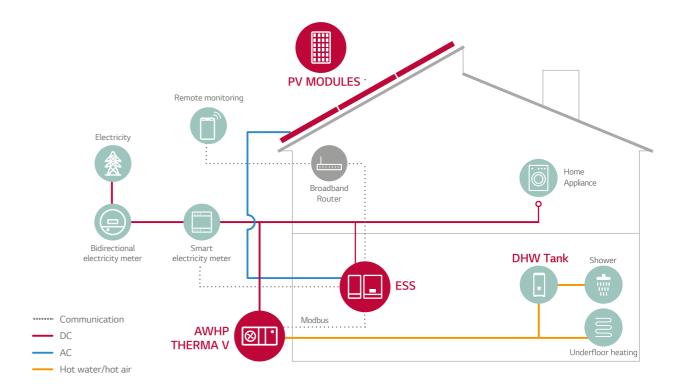
- The sun is shining brightly.
- LG PV modules are generating electricity at maximum capacity under the bright sun.
- Almost no one is at home, so the electricity consumption is very low.
- Excess electricity is charging the LG ESS system.



3:00 pm:

- The battery is now fully charged.
- But home energy consumption is still at minimal.
- Home owner can sell the electricity back to the grid. but LG Smart Home Energy Package has a better plan.
- It automatically routes the excess electricity to the LG Air-to-Water Heat Pump, filling up hot water tank.

LG SMART HOME ENERGY PACKAGE DIAGRAM



6:00 pm:

- Power consumption increases rapidly in the evening. At the same time, the power produced by the photovoltaic system gradually decreases with the sunset.
- The photovoltaic system can no longer meet the electricity demand in the house.
- Now the LG ESS system provides the stored electricity to power other devices.
- In the DHW (Domestic Hot Water) tank, hot water is ready to be used.



ONE SYSTEM, **MANY BENEFITS**

LG's innovative Smart Home Energy Package is an integrated, stand-alone system equally suitable for newbuild and renovation projects which offers you the most efficient, eco-friendly and reliable solution for your customers.

Because the system already includes all the main products, it will make your life easier by eliminating the time-consuming, expensive search for compatible components and allowing you an easier installation and ordering process.

In addition, your customers will benefit from long warranty periods, the high-quality build of all components, and service commitment from a company with a 60-year history.



The main advantages for your customers

- Energy-efficient, cost-saving solution (low waste/less electricity consumption)

Energy Storage

- Generating your own electricity and heating means reduced vulnerability to rising energy costs
- Eco-friendly: Reduced CO2 footprint compared to conventional power sources
- Reliable: Industry-leading warranty periods, high-quality products, first class service
- All-integrated: Whole package managed by the same customer service team

Air-to-Water Heat Pump (AWHP)

THERMAV.



THERMA V R32 Monobloc

The main advantages for you

- All-integrated: One-stop shopping for all your components eliminate the time and hassle of dealing with multiple suppliers – one contract/ one contact point; easier installation
- Reliability: Associate yourself with LG, a globally renowned brand with over 60 years' experience; benefit from long warranty periods and dedicated customer service
- LG offers a wider product portfolio than any other company, you to offer your customers a choice to meet their individual needs
- Customizable for different type of houses Partnering with LG will increase your opportunities to meet the growing customer demand for energy-efficient home solutions and for you to offer your customers a choice to meet their individual needs

132 | 133

INTRODUCTION OF ENERGY PACKAGE





LG PV SOLAR MODULES

Timeless design meets advanced technology

LG offers a wide range of high-performance solar modules for virtually any application. They are highly efficient, delivering better performance within the available space on your roof. Our solar modules offer outstanding durability and undergo intensive testing, minimizing the risk of defects. In addition, an industry-leading warranty of 25 years is offered. LG modules have been designed with aesthetics in mind, enhancing any roof's appearance and increasing the value of the building.

- 25-year warranty
- Highly efficient
- Better performance per square metre
- Premium black design
- Outstanding durability (able to withstand high pressures)





LG ENERGY LG ESS SOLUTION

Enjoy solar energy even after sunset

The LG Energy Storage System (ESS) means you can offer your customers a complete smart solution for energy-efficient homes by allowing the storage of solar-generated electricity for maximized self-consumption any time day or night. Our ESS converts power extremely efficiently, generating three-phase AC power without the risk of unbalanced loads occurring. And thanks to 24-hour web monitoring, the status of the ESS can be checked anytime, anywhere.

- 10-year warranty
- Compact plug & play system
- DC-coupled & 3-phase system
- Battery capacity expansion
- 24h web monitoring



Battery



LG AIR-TO-WATER HEAT PUMP

Perfect indoor climate in every season

The LG THERMA V makes your home warmer and more comfortable. It provides a greener heating solution thanks to its revolutionary scroll compressor and R32 refrigerant. This Air-to-Water Heat pump system uses electricity for only 25% of

its energy needs, obtaining the remaining 75% from naturally ocurring air source heat. It works reliably even in extremely cold temperatures down to -25°C and delivers water with a maximum outlet temperature of 65°C.

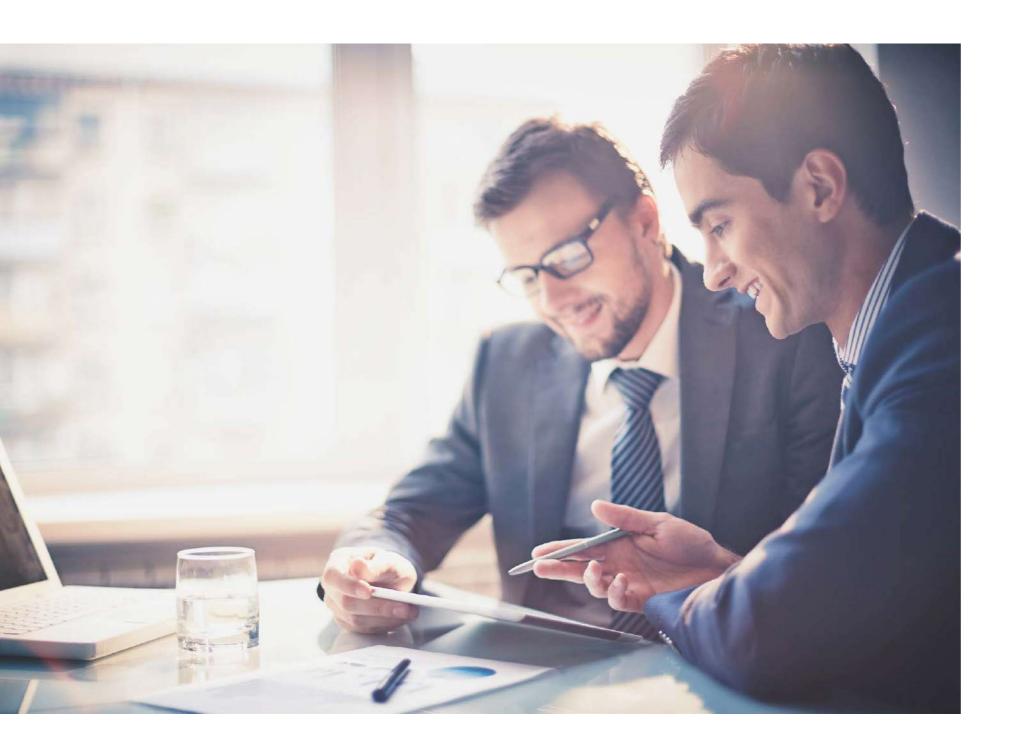
- Energy and cost saving
- Excellent performance even at low ambient temperatures (extremely reliable down to -25°C)
- Flexible design and easy installation
- Low noise level of only 52 dB (A)
- Lower global warming potential (GWP) through the use of the new refrigerant R32
- Remote control via Android and iOS smartphone with The LG ThinQ App







THERMA V R32 Monobloc



OUR SERVICE, YOUR SUCCESS

Working with LG means having a strong, reliable partner at your side every day. Our long-term expertise in all relevant fields solar, energy storage and air conditioning combined with an extensive range of services is the ideal way to add value to your business.

LG Electronics Business Solutions

We offer professional solutions in air solutions, solar power and information display. As a leader in B2B innovation, LG Electronics Business Solutions aims to provide comprehensive solutions including consultancy, installation, maintenance and support in collaboration with its professional business partners. LG Business Solutions Europe is located at the LG Electronics European Headquarters in Eschborn, Germany, with addititonal offices throughout Europe.

LG Academy

Our new LG Academy is located in Eschborn, Germany. We offer training courses and certification programmes with full support and service. And we'll also be delighted to help you regarding individual requests and requirements.

Want to learn more?

Please visit www.lg.com/global/business or contact us at eu.b2b@lge.com for further information.





BRAND BUSINESS **PRODUCTS** ENGINEERING ONLINELG TOOLS HVAC GUID

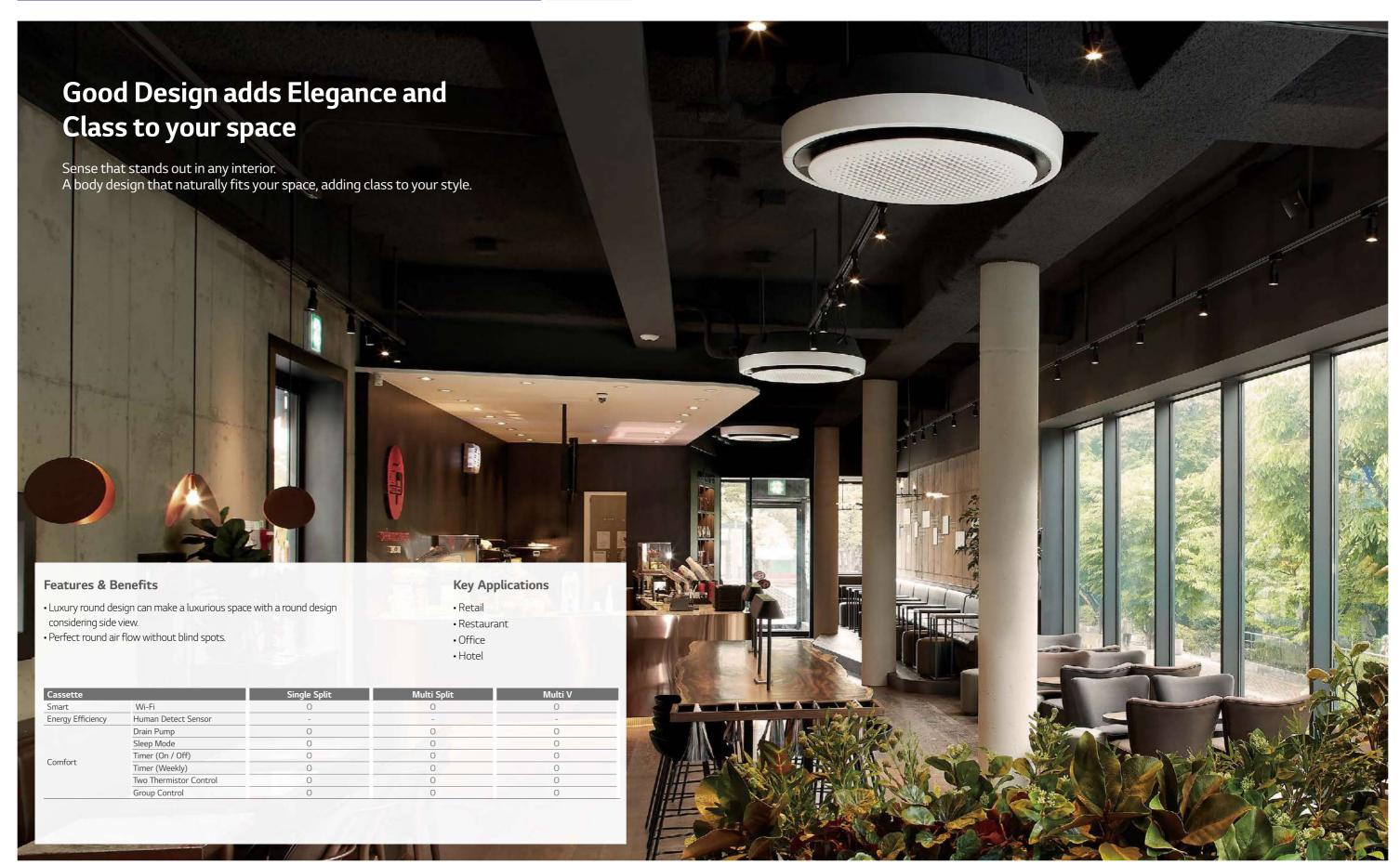
3 PRODUCTS

PRODUCTS

New Product Introduction	14
Round Cassette	1-
Air Purification Cassette	1-
Dual Vale Cassette	1-
• Wall Mounted Hydro Kit	1-
• Multi V S R32	
• Multi V Hybrid	
R32 Hydrosplit	
• IWT (Integrated Water Tank)	
R32 Silent Monobloc	
Smart Home Energy Package	1
Puricare Wearable Air Purifier	1
Portable Air Conditioner	1
Heat Pump Water Heater	1
Key Features	16
Comparison with Competitors	23

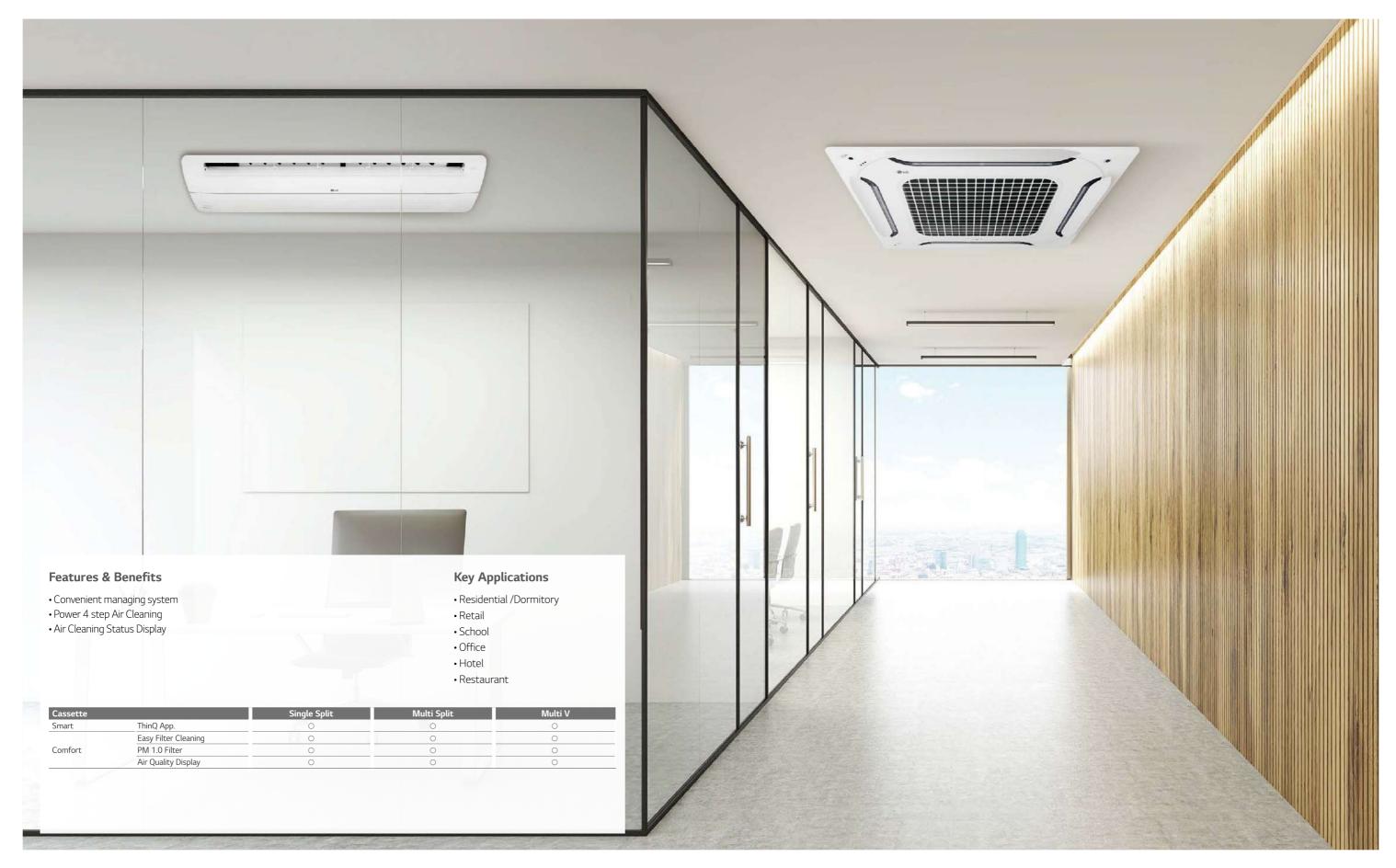
ROUND CASSETTE





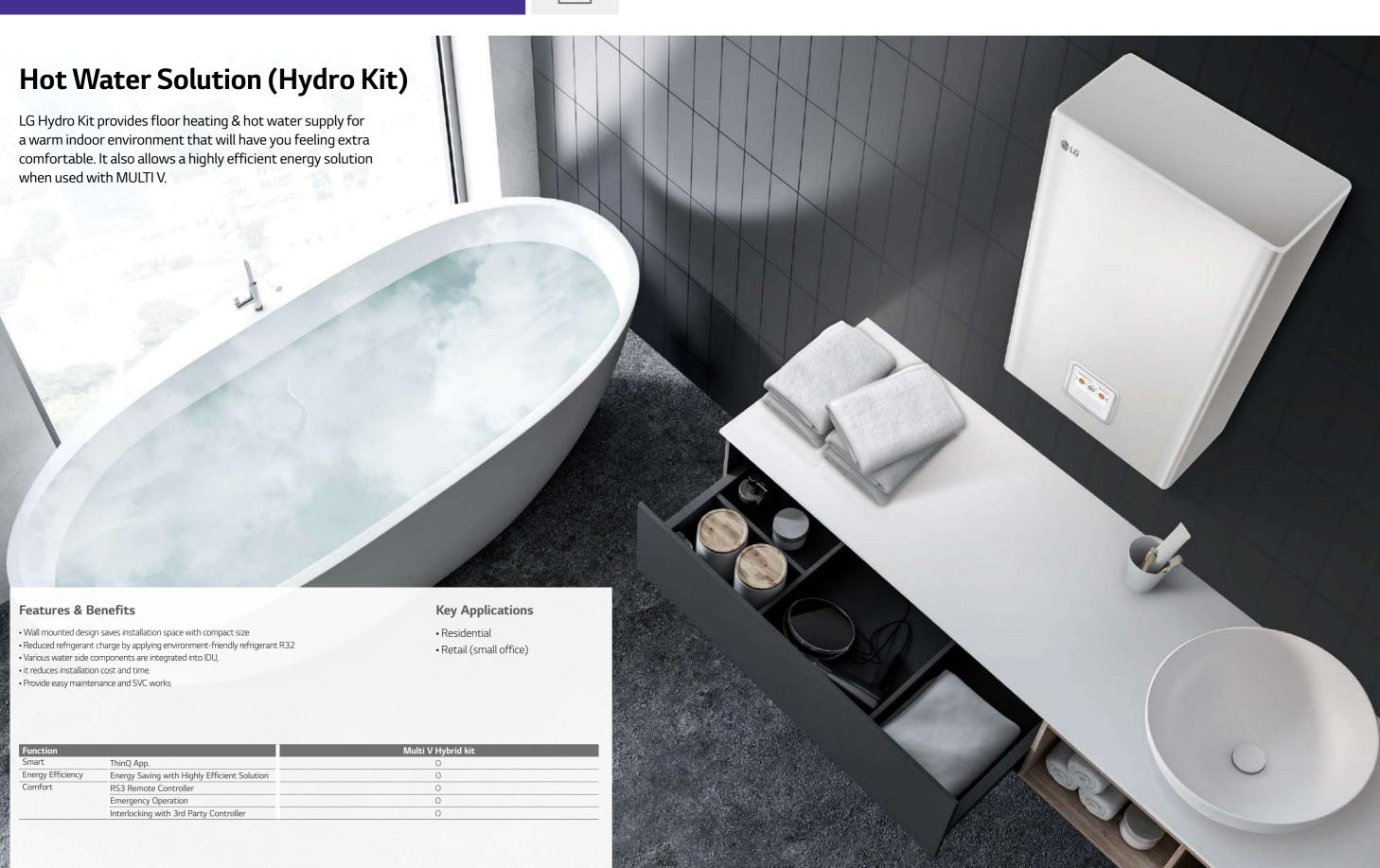
AIR PURIFICATION CASSETTE





WALL MOUNTED HYDRO KIT



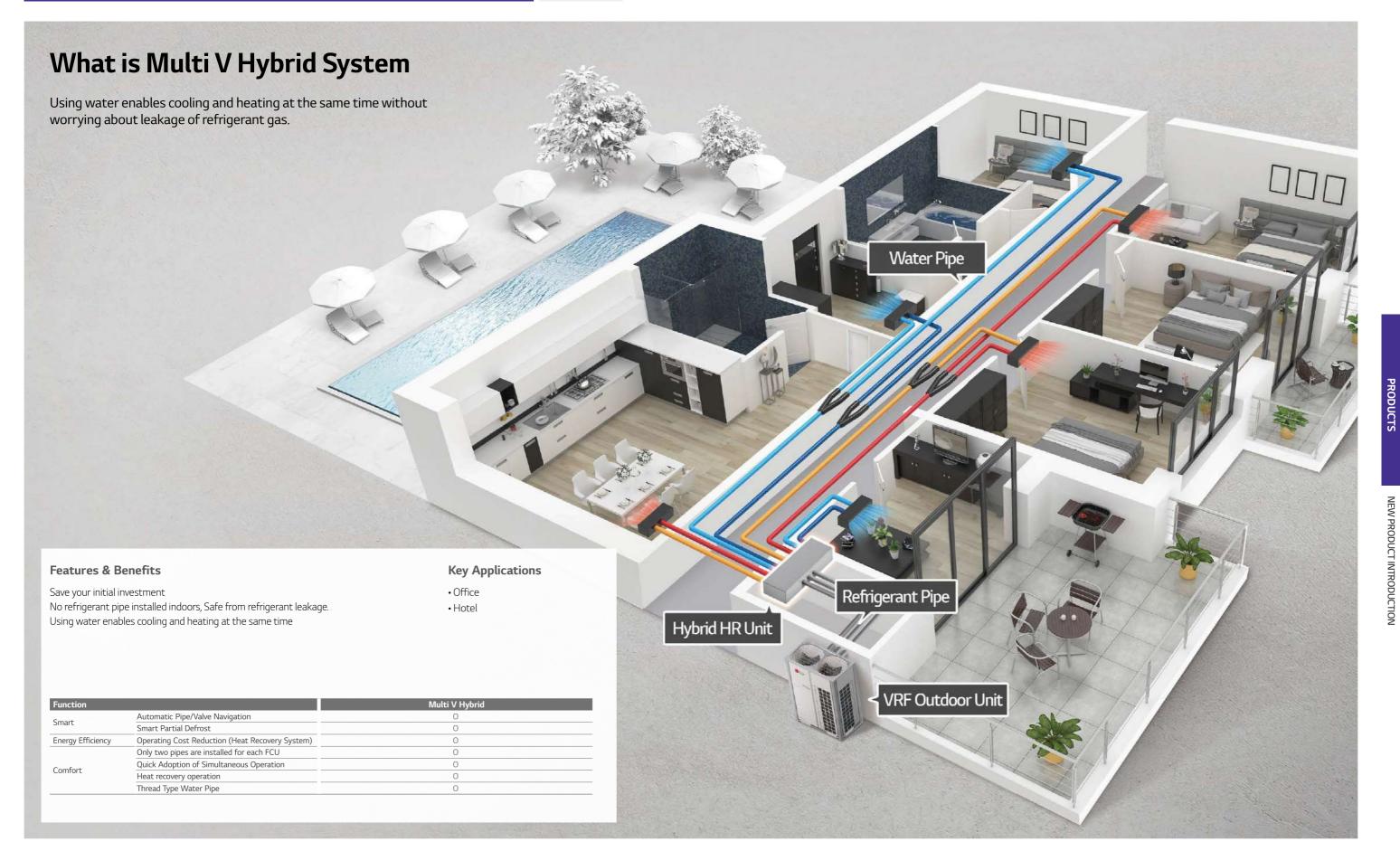






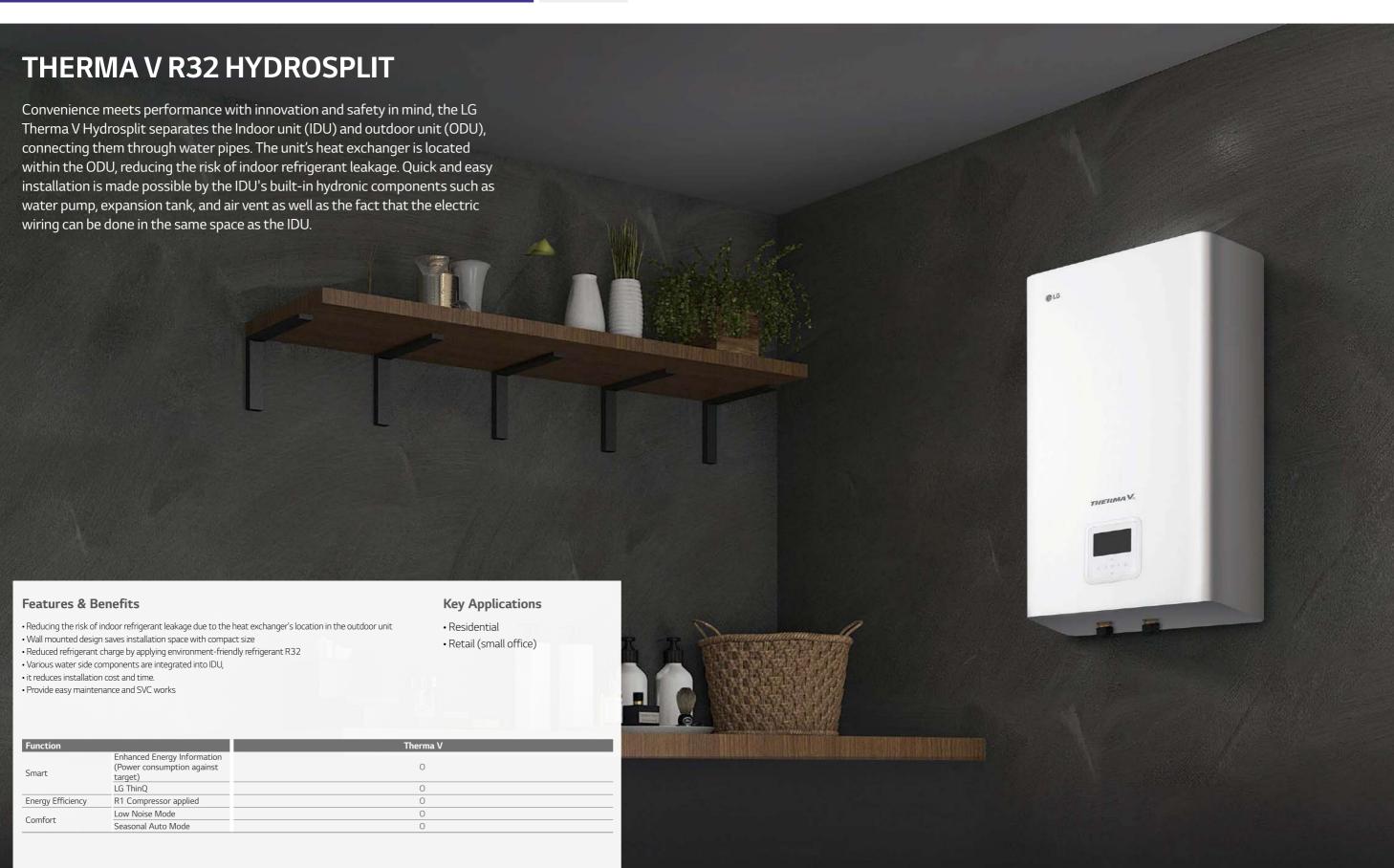
MULTI V... HYBRID





R32 HYDROSPLIT





IWT (INTEGRATED WATER TANK)



THERMA V R32 IWT (Integrated water tank)

THERMA V R32 IWT, or integrated water tank, is a domestic hot water supply, space heating and cooling solution that conveniently combines an indoor hot water tank with a separate outdoor unit. THERMA V R32 IWT is the perfect space-saving solution for residential applications because hydronic components like the domestic hot water (DHW) and buffer tanks, which are typically installed separately, are fully integrated.



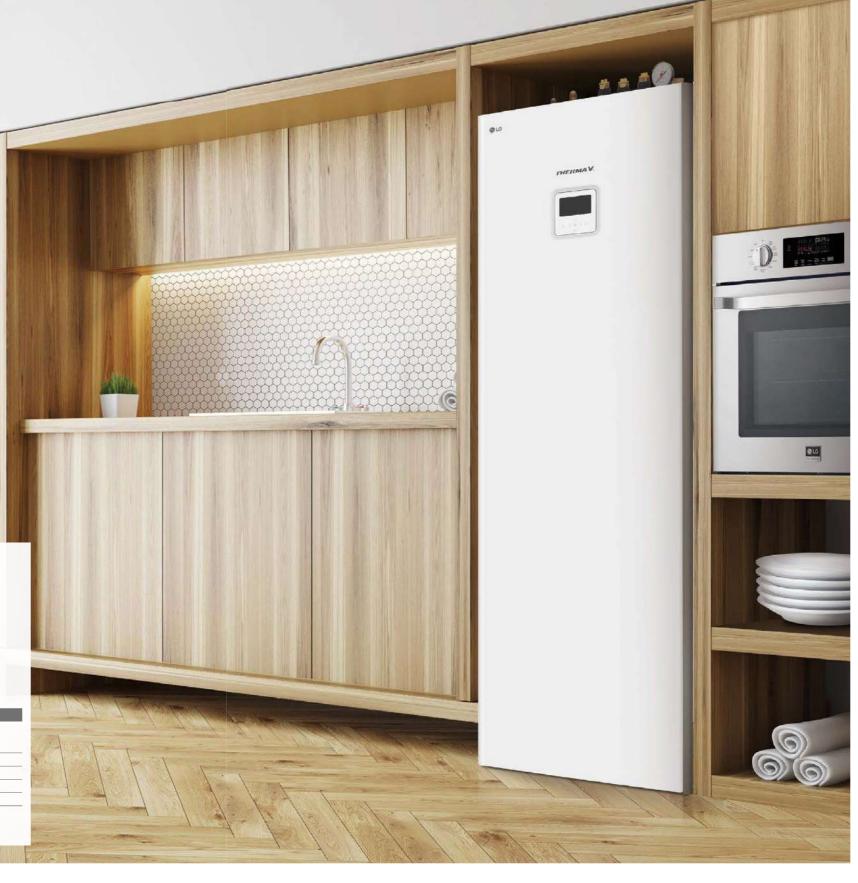
Features & Benefits

- DHW tank (2001) & hydronic component integration
- IWT indoor unit is suitable to install in indoor space like utility room, kitchen, etc.
- R1 compressor applied for high efficiency and operation range is improved
- $\bullet\,\text{R32}$ is more efficient and boasts 68% reduced Global Warming Potential (GWP) than the conventional

Key Applications

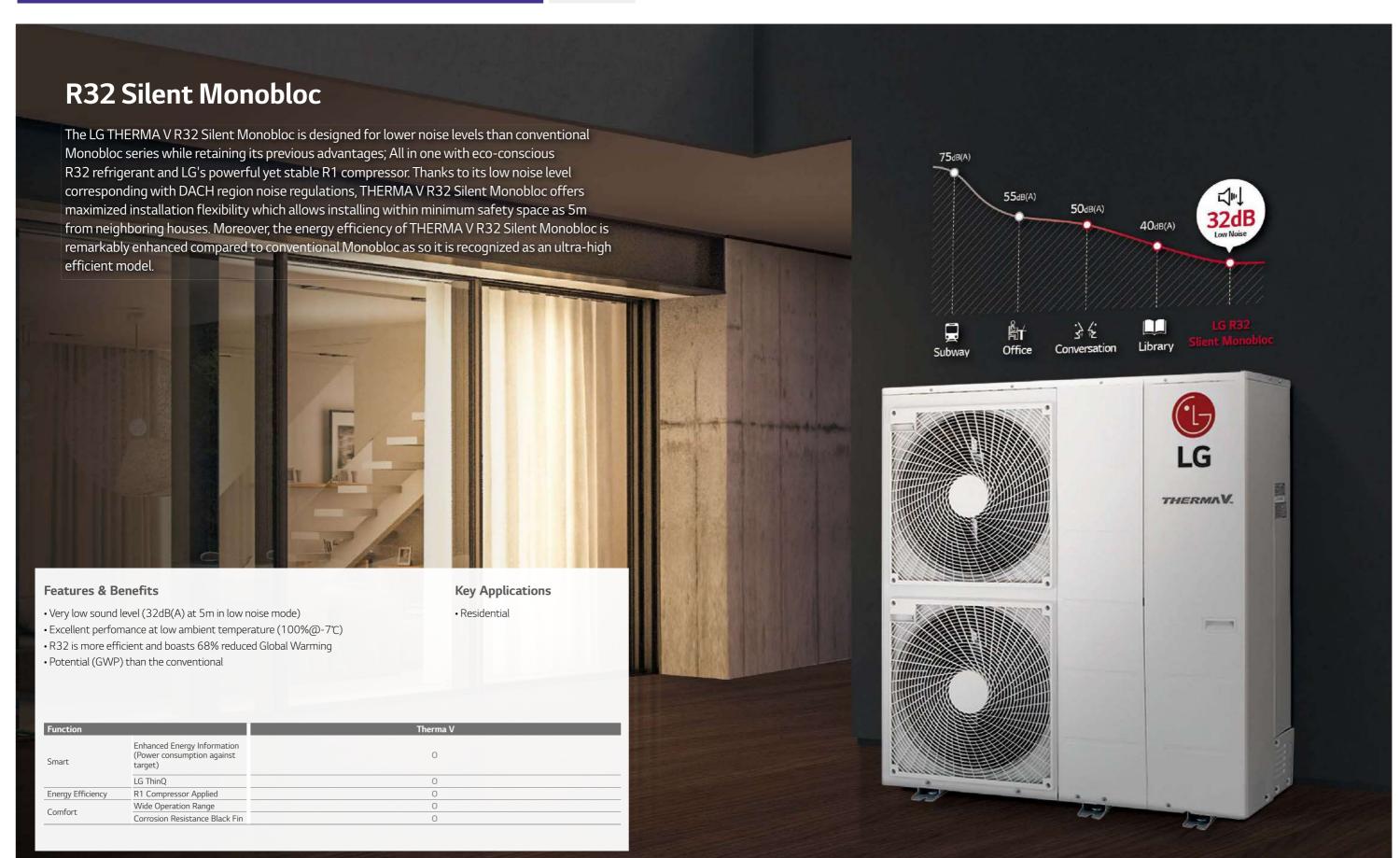
Residential

Function		Therma V
Smart	Enhanced Energy Information (Power consumption against target)	0
	LG ThinQ	0
Energy Efficiency	R1 Compressor applied	0
Comfort	Low Noise Mode	0
	Seasonal Auto Mode	0



R32 SILENT MONOBLOC





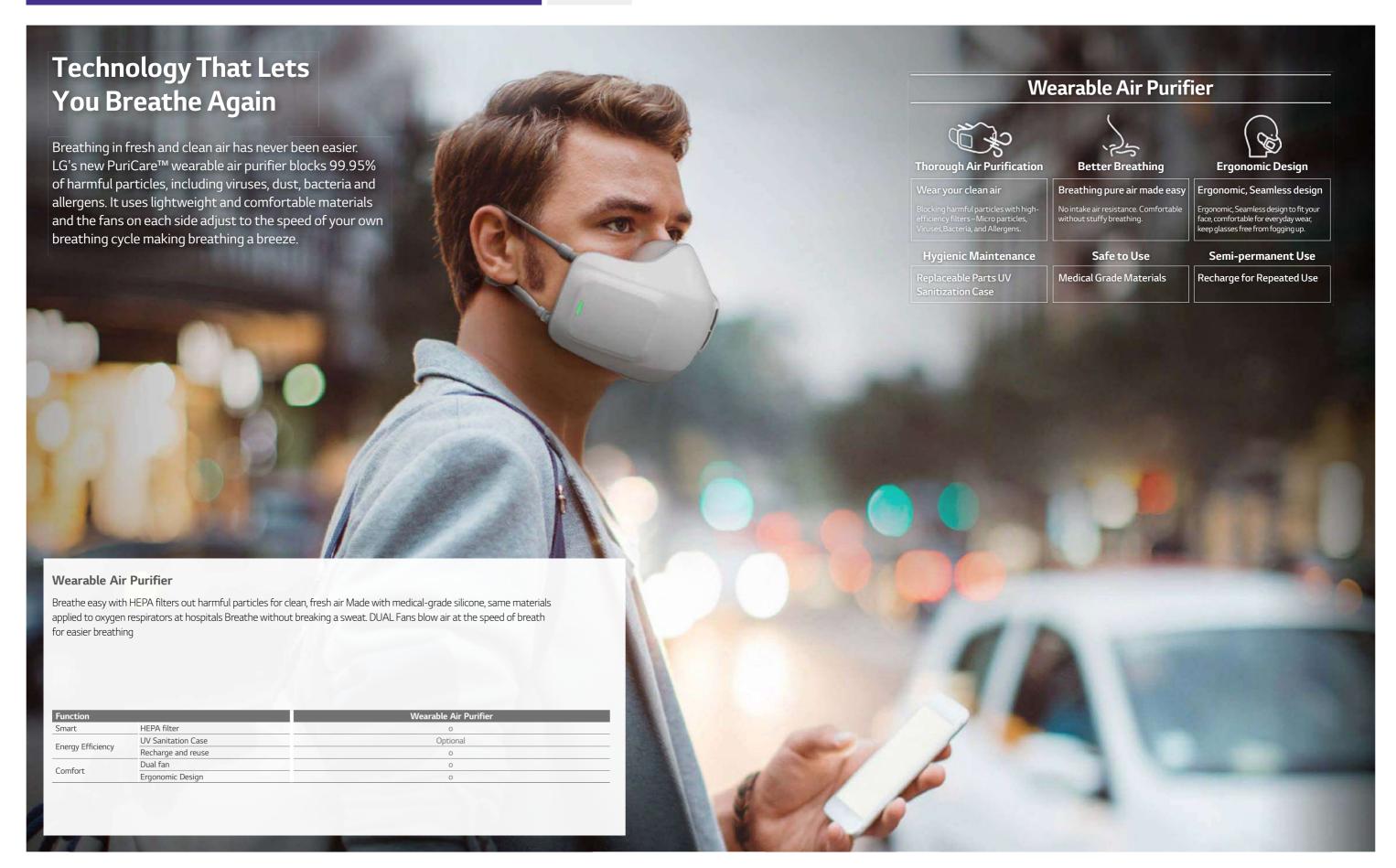
SMART HOME ENERGY PACKAGE





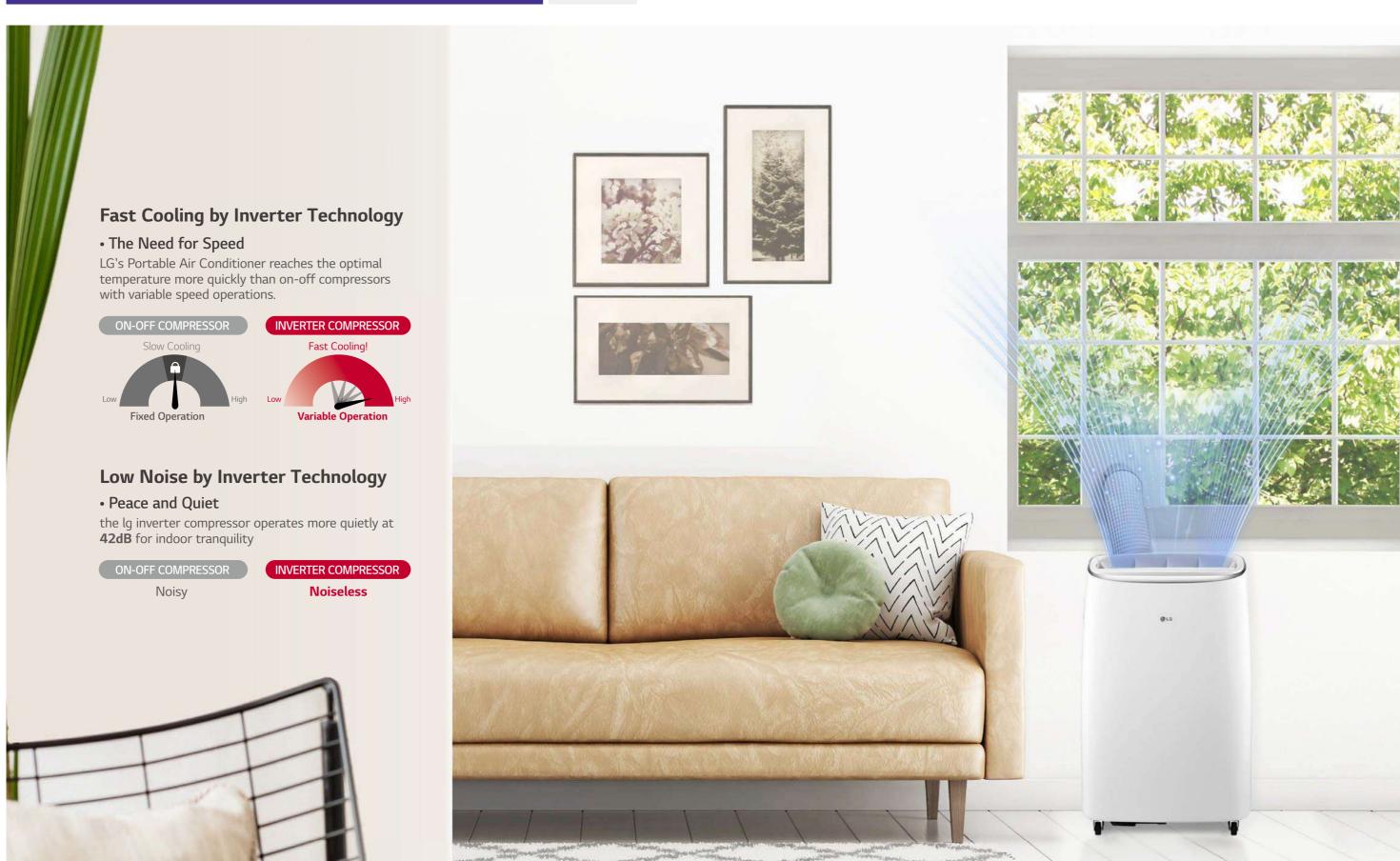
LG PuriCare[™] Wearable Air Purifier





PORTABLE AIR CONDITIONER







HEAT PUMP WATER HEATER







R1Compressor™

R1 Compressor is one that combines high-efficiency, low sound characteristics of the scroll and the simple compressing structure of the rotary compressor. This technology enables a highly efficient compact model.

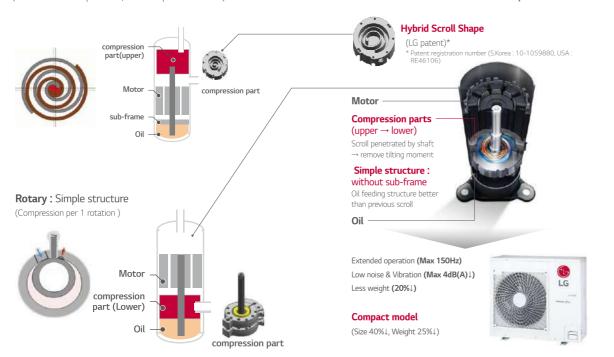


Conventional Compressor

Scroll: High efficiency / Low sound (Continuous compression, but complex structure)

R1Compressor™

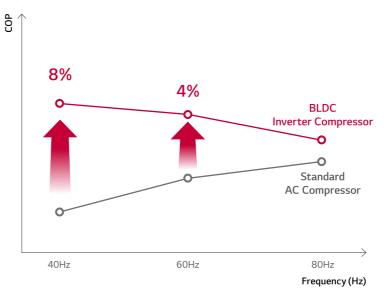
Revolutionary Scroll: High efficiency / Stable & Simple Structure



BLDC (Brushless Direct Current Motor) Compressor

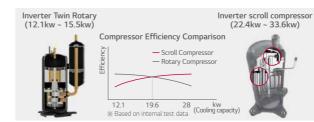
a BLDC compressor uses a strong neodymium magnet. The compressor has improved efficiency compared to standard AC inverter product and it is optimized for seasonal efficiency.

- · Minimized oil circulation
- Optimized vibration, noise
- · High efficiency motor
- High reliability
- Optimized compression



Ultimate Inverter Compressor

Inverter Twin Rotary & Inverter Scroll Compressor: Adapted High Efficient Compressor according to Capacity





Inverter Twin Rotary

Concentrated Winding Motor

Oil path area is improved by over 50% by increasing the extra stator cavity. Due to this, caloric value of motor is reduced, improving the cooling function of stator coil.

Twin Rotary Rotor

Upper and lower part rotor offset imbalance in shaft rotor rotation. Vibration and noise is reduced. Max torque load decreased by 45% compared to single rotor.

Surface coating of outstanding abrasion resistance property on vane and crank shaft.

Inverter scroll compressor

Best-in-class Compressor Speed

- Rapid response capability
- Compact core design (Concentrated motor) Down to 15Hz: Part load efficiency improvement



6 Bypass Valve

Compressor reliability is maximized with 6 Bypass Valve

- Prevent compressor damage due to excessively compressed refrigerant n efficiently than 4 Bypass valve

Direct Oil Injection

- Eliminate suction refrigerant gas heat loss through direct oil injection into compression chamber (Efficiency increases) - Increased reliability with regulated oil supply

Scroll Profile

- The enhanced reliability by Increased reliability with regulated oil supply.
- Efficiency increases by expanding 96% Bypass area and 17% improved volume ratio by nonuniform scroll thickness



Improved BLDC Inverter Dual Inverter Compressor

Parts of BLDC Inverter Twin Rotary Compressor have been improved to allow a longer life span.

Suction Optimization

Reduced suction loss and improving oil collection through the optimization of suction path.

Flow Optimization

Reduced oil inflow by increasing the length of oil discharge pipe, leading to a sufficient oil quantity inside compressor hence preventing compressor abrasion.

Surface Coating

Shaft coating and polishing has been improved.

Concentrated Winding Motor

- Oil path area is improved by over 50% by increasing the
- Due to this, caloric value of motor is reduced, improving the cooling function of stator coil.

Twin Rotary Rotor

- Upper and lower part rotor offset imbalance in shaft rotor rotation. Max Torque has been decreased by 45% compared to single rotor.
- Vibration and noise is also reduced.



Twin Rotary **Inverter Compressor**

Pressure Control Technology by Smart Sensor

Quicker and more reliable operation made possible by pressure control technology.

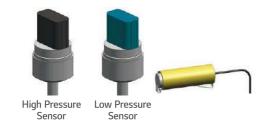
• Field Failure Rate of Outdoor Unit

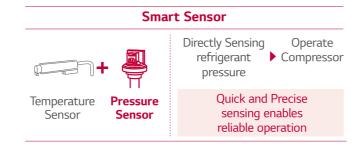


FFR Period : 2 years before / after applying pressure sensor

Temperature + Pressure Control

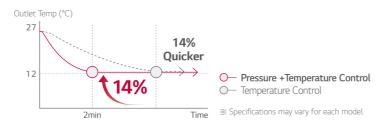
Senses and controls pressure directly using pressure sensor for faster and more exact response to load variation.





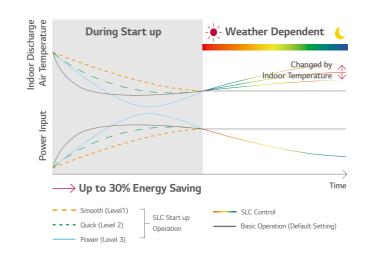
Quick Operating Response

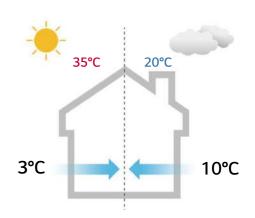
Desired temperature can be reached up to 14% faster in cooling mode with pressure control, allowing more accurate control of indoor environment for maximized comfort.



Smart Load Control

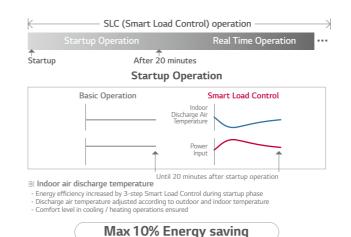
To save operation energy consumption, automatically controls the refrigerant temperature according to outdoor temperature.

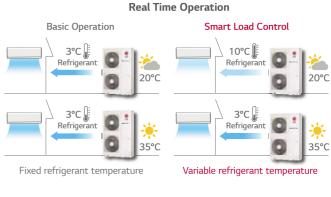




Enhanced comfort and up to 23% energy savings with MULTI V load control

MULTI V S changes indoor discharge air temperature continuously according to load, to save energy.





* How to set up : By dip switch in outdoor unit (Referred to Product Data Book) Factory default setting is Off.

Max 13% Energy saving

- * ESEER (European seasonal energy efficiency Ratio) conditions based on 15.5kw unit
- Outdoor temperature condition : EER 100% / 75% / 50% / 25% = 35°C (DB) / 30°C (DB) / 25°C (DB) / 20°C (DB) Indoor temperature condition : 27°C (DB) / 19°C (WB)
- % Dual sensing (Temperature & humidity) smart load control is possible with Remote controller PTEMTB100 (White) /PREMTBB10 (Black)



DUAL Sensing Control

Air conditioners can rapidly achieve a comfortable indoor environment for customers with Temperature & Humidity Sensors.





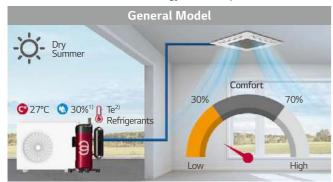
By sensing both temperature and humidity, this feature helps avoid over-cooling and dehumidification, maximizing comfort



* Comfort cooling apply to Ceiling Cassette, Ceiling Suspended, Console It does not apply to small capacity cassette models. (UT09FH, UT12FH, CT09F, CT12F, CT18F)

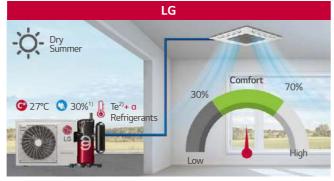
Dry Summer

During a dry summer season, the system senses the low humidity levels and decreases the operating ratio to increase humidity for a more comfortable environment and energy efficient operation.



- Uncomfortable Environment
- Excessive latent heat elimination regardless of humidity
- Waste Energy

Eliminate latent heat unnecessarily



- Comfortable Environment
- By making the room less dry
- Increased Energy Efficiency

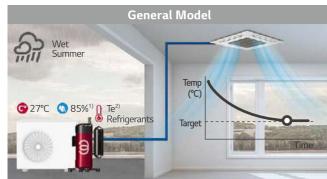
Provide optimized cooling and save energy considering humidity

Humidity Condition: Low (<30%), Standard (30~70%)

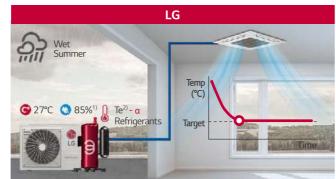
1) Indoor Condition 2) Evaporation Temperature

Wet Summer

During a wet summer season, the system senses the high humidity levels and increases the operating ratio to rapidly decrease humidity for a more comfortable indoor environment.



 Uncomfortable Environment General latent heat elimination regardless of humidity



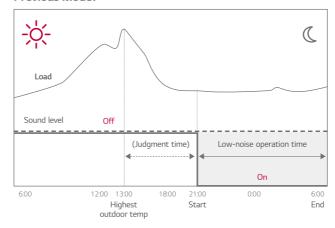
Comfortable Environment

Quick latent heat elimination with humidity sensors

1) Indoor Condition 2) Evaporation Temperature

For noise sensitive environment

Previous Model



MULTI V. 5 -;¢;-Load Scheduled setting available Sound level Low-noise operation Low-noise

On

Off

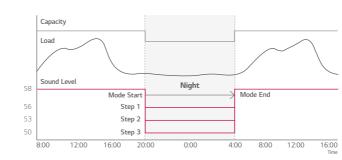
Start

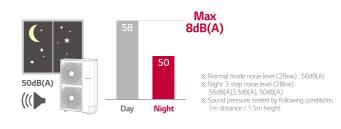
Indoor setting available



Night Silent Operation can reduce noise levels at night time by simply setting the dip switch on the PCB of the outdoor unit.

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







| INNOVATIVE TECHNOLOGIES |

Continuous Heating

Variable Path Heat Exchanger: Optimized system efficiency & continuous heating



Low ambient cooling and / or light building load

- Half active
- Lower idle



Full load cooling

- Upper & lower active
- Series circuited
- · High velocity refrigerant flow

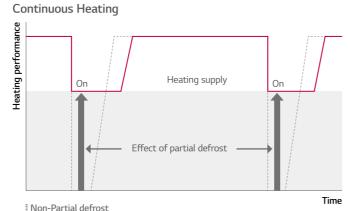
MULTI V. 5



Heating - all conditions

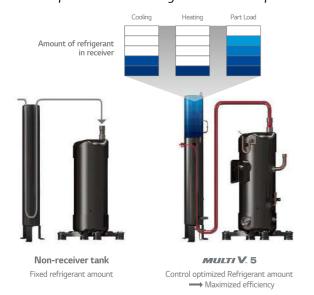
- Upper & lower active
- Parallel circuited
- Low velocity refrigerant flow

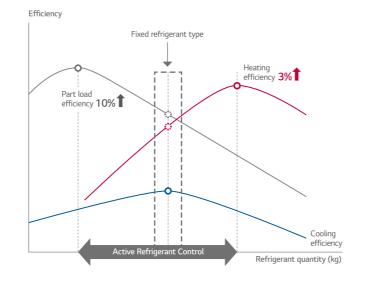
Efficiency Cooling Half Active Parallel



Active Refrigerant Control

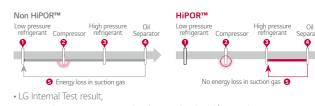
Stable operation & sustaining most efficient operation





HiPOR™

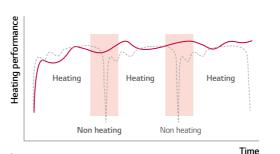




- Test condition 15Hz Rating Condition : TC = 37.9°, Te : 7.2°C

Smart Oil Management

Energy saving, enhanced heating & increased compressor reliability



Timed oil return logic (Non_oil Sensor) MULTI V. 5

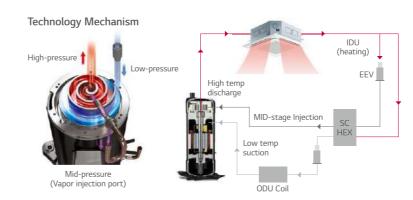
Increased heating operation time per day : Up to 12%

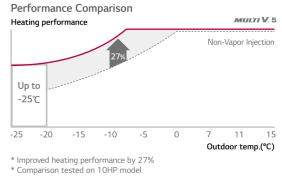
- LG Internal Test result,
- Test condition
- without oil level sensor: every 8hour oil recovery operation
- with oil level sensor: non oil recovery operation



Sub-cooling & Vapor Injection

Increased heating performance







Process

Repeated

Corrosion Resistance Black Fin

The black coating with enhanced epoxy resin is applied for strong protection from various corrosive external conditions such as salt contamination and air pollution including fumes from factories.



SST (Salt Spray Test)

Test Process



Test process is conducted according to ISO 9227.

1) Salty water concentration: NaCl aqueous solution (5%)

CCT (Cyclic Corrosion Test)

Test Process



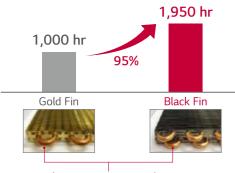
Test process is conducted according to ISO 14933.

1) Salty water concentration: NaCl aqueous solution (5%)

※ Dry condition changed: 60°C, 4hr → 70°C, 2hr

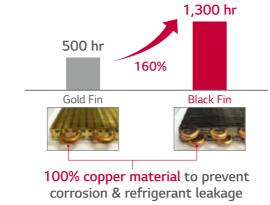
2) Deionized water

Test Result (5% Area of defects compared to initial)



100% copper material to prevent corrosion & refrigerant leakage

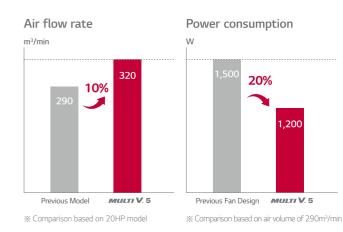
Test Result (5% Area of defects compared to initial)



Biomimetic Fan

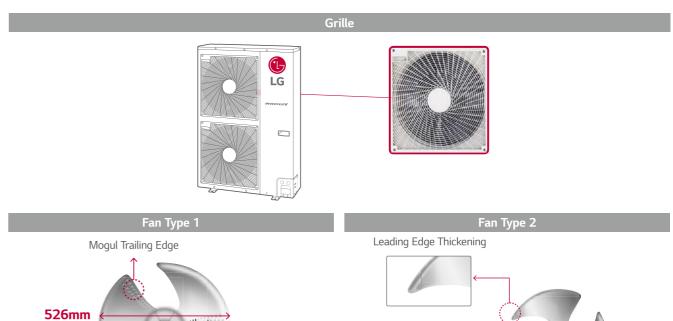
Maximized performance





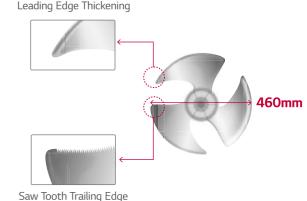
Advanced Grille & Fan

The improved grille shape design on the outdoor unit helps to distribute air more efficiently which improves heat exchange and reduces the noise level. The new axial Fan has a thick front edge and a smooth rear edge, thus providing not only high efficiency, low noise, wide fan, but also improving the air flow rate.



Reverse Hub

Narrow Hub Blade

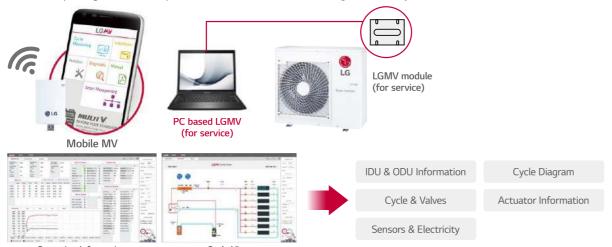


176 | 177

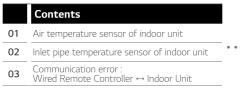


LG MV (Monitoring View)

LG MV helps engineers to inspect and monitor air conditioning units easily.



Error Indicator





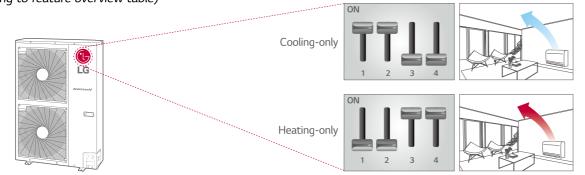


A technician not only can check the cycle information with diagrams & graph, but also check easily the error status (Troubleshooting guide) and take action immediately.

% Search "Mobile LGMV" on Google or Apple store then download the app. % Wi-Fi modem (PWFMDD200) is required by option.

Mode Lock

Set the operation mode to either cooling-only or heating-only; either by adjusting the wired remote controller or setting the DIP switch to avoid combined use of cooling and heating. (Some models need wired remote controller for mode lock function according to feature overview table)



LG ThinQ™

Wi-Fi Control: Anytime, anywhere access to the unit with Android & iOS-based smartphones.



LG ThinQ

Search "LG ThinQ" on Google market or the App Store to download the app.

Integrated Home Appliances Control

Control / Monitor all your LG appliances from one place.



Simple operation for various functions











% Search "LG ThinQ" on Google or Apple store then download the app. % Wi-Fi modem (PWFMDD200) is required by option.

Easy Registration and Log-in

Follow the easy set-up steps that will activate LG ThinQ's user-friendly features.



Straight forward Management



Access your air conditioner anytime and from anywhere



Simple operation for various functions

- Air Purify*
- On / Off*
- Mode Selection*
- Current temperature*
- Vane Control
- Set fan speed*

• Set temperature*

- * This functions are used by google assistant & amazon alexa $\,$ % In some countries, the use of the google assistant & amazon alexa system may be
- Launched country : Germany, UK, Ireland, Austria, Switzerland, France, Spain, Italy,
- Russia, Norway, Netherland, Portugal, Turkey, Sweden, Denmark

WALL MOUNTED



| FRESH AIR |

Plasmaster[™] Ionizer[†]

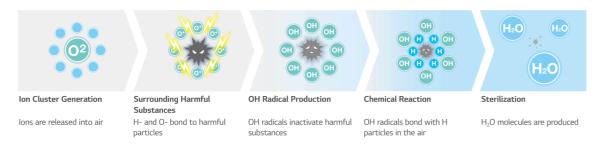
The powerful Ionizer protects you from bad odors and Escherichia coli and Staphylococcus in the surface with over 3 million ions to sterilize to make a safer, and cleaner environment.

% Specifications may vary for each model.% Depending on the experimental conditions

How It Works

Sterilization and Deodorization (Utilizes Over 3 Million Ions)

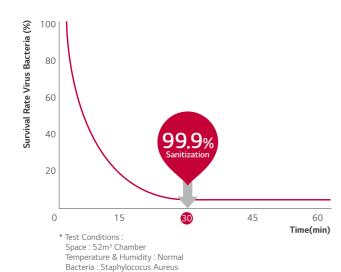
Plasmaster Ionizer+ reduces harmful and contagious microscopic particles by infusing the air passing through the air conditioner with over 3 million ions.



• Test Result

Sterilization Performance Evaluations

Sterilize Bacteria (E.coli colon bacillus) over 99.9% in 30 min.



2.1 odor strength decrease in 60 minutes

An odor of measured as 2 European odor units (ouE/m³) or less indicates that the level of odor falls within permissible limits.



Odor strength reduce 3.6 \implies 1.5 / The Odor floating in the room as well as curtain and

KEY FEATURES

| FRESH AIR |

Auto Cleaning

The unit has a self-cleaning funtion that dries the heat exchanger before sterilizing the interior.

The interior of the air conditioner is maintained clean by drying off the heat exchanger, then sterilizing the interior once more.

* Specifications may vary for each model.



How It Works

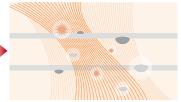
Cleans Filter with Regular Airflow

The comprehensive auto cleaning function prevents the formation of bacteria and mold on the heat exchanger, providing an enhancing environment.





By dehumidifying, the auto cleaning function eliminates substances that might be harmful.



The indoor environment remains odorless with the advanced deodorizing function.



By preventing polluting of the heat exchanger caused by various germs and bacteria, the performance and life span of the air conditioner do not wither away even after a period of 10 years.

Benefit

Removes Harmful Particles

Auto Cleaning provides clean air by preventing bacteria, mold and odors that can otherwise accumulate in an indoor unit.









Prevention

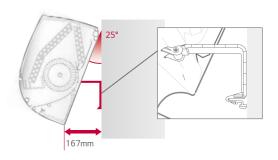
Odor Elimination

Mold Elimination

| INSTALLATION |

Installation Support Clip

A support clip creates adequate space between the wall and the unit for easier installation.



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WALL MOUNTED



| FAST COOLING & HEATING |

Auto Swing

Cool air extends to the entire room regardless of where the unit is situated.

* Specifications may vary for each model.

How It Works

6-Step Vane, Control up to 70°

The vertical vane, which moves up and down, has 6 different settings including full-auto swing.



* Angle can be different from each model and working mode.

5-Step Louver, Control up to 55°

The louver, which sways left and right, has 5 different settings including full auto-swing.



Easy and Simple Control

Airflow direction can be changed by LG ThinQ Wi-Fi app.



Left/Right Swing



Jet Cool

LG air conditioners provide optimized high-speed airflow, which can cool rooms faster while delivering cool air evenly in every direction.

% Specifications may vary for each model.% Depending on the experimental conditions

How It Works

One Click "Jet Mode"

Reduces the temperature of outflowing air to 18°C for 30 minutes with just one click.



KEY FEATURES

KEY FEATURES FOR INDOOR UNITS

CEILING MOUNTED CASSETTE



| NEW DESIGN |

DUALVane[™]

4 Way Air Flow with New Design: New Excellent Technology (NET) certifies new 4 way dual vane design that promotes comfortable and convenient airflow.



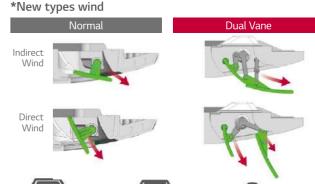
*6 Airflows mode







Auto Vane Control Smart Mode



Indirect Wind



Direct Wind

Indirect cooling & Heating Suitable for High Ceiling Provide high concentration Refresh Mode

Wide Design

Bigger inlet and outlet make faster cooling / heating airflow.



Full 3D Turbo Fan

Full 3D Turbo fan decreases air resistance, so it makes High Efficient and reduces noise level.





Power consumption 13W ↓, Noise 3dB(A) ↓



Improved outlet flow rate

182 | 183

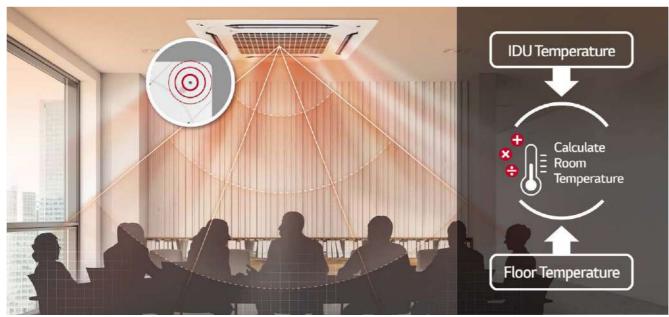
CEILING MOUNTED CASSETTE



|SMART|

Ceiling to Floor Temperature Sensing

With a special sensor that sense both ceiling and floor temperature, dual vane 4 way cassette provides comfort air.



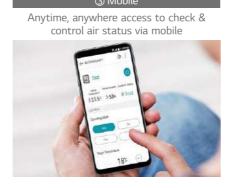
* Available only for products with floor temperature sensor.

Air Quality Level Display

Wi-Fi functionality for anytime, anywhere indoor unit control and air quality level display.







Human-detection Air Flow

Human detection provides users with direct or indirect air flow preferences.



Provides air flow that blows directly onto user for cooling. Direct airflow 2°C Cooler

Direct cooling

* Available only for products with Human Detecting sensor.

Convenient & Powerful 5-Step Air Purification

Easy-to-manage air Purification system with one-touch air cleaning filter.



184 | 185

PRODUCTS

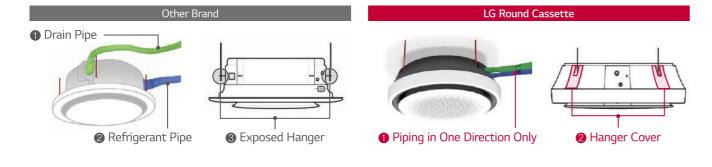
ROUND CASSETTE



| NEW DESIGN |

Minimal exposure design

Pipes are brought together in one place to minimize exposure. Hanger covers hide installations to add a clean look.



Perfect round air flow

Perfect round flow without blind spots.



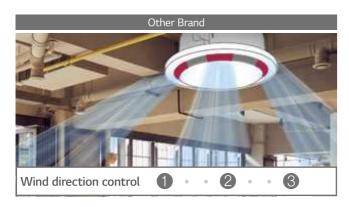




Perfect circular airflow without blind spots.

Visible air flow

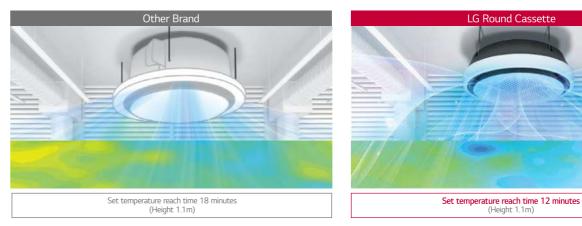
With crystal vein for 6-step precision control, you can send cool / heated air wherever you want.





30% Faster in cooling

Larger airflow rate, cooling rate is faster than 30%.



** Based on test results from LG chamber, this image is designed to help customers understand. Experimental environment: height 3.2m, 48 kBtu, cooling mode, high horizontal air flow direction

nigh flow rate,

Powerful and Quiet air flow

3D fan increases airflow by 5% and noise reduction technology makes a quieter, more comfortable space.



Slim and Compact design

Reduce the height of the body by 15% save space and maximize the openness of the interior space.







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KEY FEATURES FOR INDOOR UNITS

CEILING CONCEALED DUCT

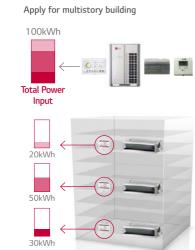


| ENERGY EFFICIENCY |

Energy Monitoring

Accumulated electric energy of the indoor unit can be identified with wired remote control, as well as with the central controller. This function is an advantage for energy management.



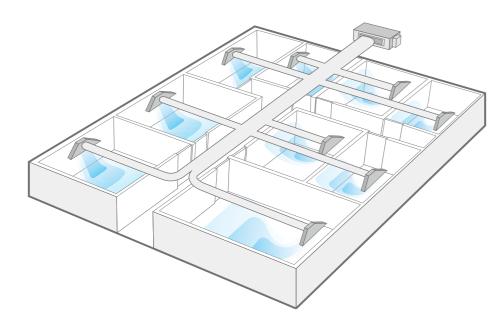


Woutdoor unit's accumulated electric energy / using rate of individual indoor unit + indoor unit's accumulated electric energy is displayed in wired remote controller, only when central controller, digital integrating electricity meter and PDI are installed and PDI, outdoor unit and indoor unit are connected with power wire. Only total accumulated electric energy is displayed in standard wired remote controller. In premium wired remote controller, that are displayed into week / month / year.

| COMFORT |

Multiple Room Operation

Using a spiral duct (Embedded or flexible type) and stream chamber, it is possible to operate cooling / heating for several rooms simultaneously.



| COMFORT |

Filter Alert

The alarm is activated when the filter needs to be cleaned, and the time remaining for cleaning is displayed on the screen.

Remain Time Until Indoor Filter Cleaning + Alarm



Remain time until indoor filter cleaning 2,400hr.



Remain time until indoor filter cleaning 1,729hr.

| ENERGY EFFICIENCY |

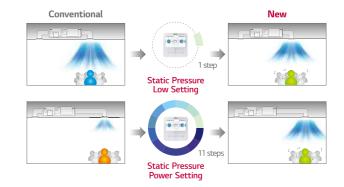
External Static Pressure (ESP) Control

User has easy access to air volume selection via remote controller using the ESP control function. The BLDC motor can control fan speed and air volume. No additional accessories are necessary to control air flow.



Static Pressure 11- Step Control

Depending on the installation environment, LG's ceiling concealed duct controls the static pressure with 11steps to provide maximized comfort to any environment.



CEILING & FLOOR CONVERTIBLE



|SMART|

Wi-Fi Control

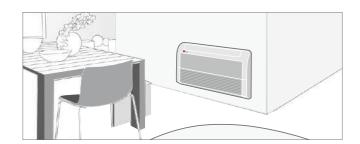
Anytime, anywhere access with LG ThinQ mobile app.

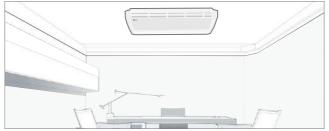


| COMFORT(CONVERTIBLE) |

Flexible

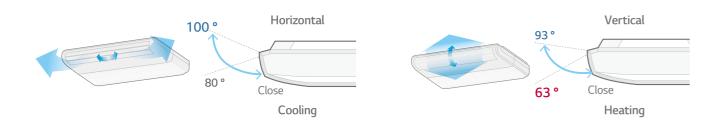
The ceiling and floor models can be installed either on the ceiling or on the floor.





Air flow Direction Control

Vertical air flow direction can be adjusted using remote controller, and horizontal Air flow direction can be adjusted manually.



Filter Change Alarm

The filter change alarm informs you when the unit has been operating for 2,400 hours.



CEILING SUSPENDED



| COMFORT(CONVERTIBLE) |

Differentiated Design

Modern elegance design with V-shape and black vane is appropriate for any commercial space. It received iF Design Award.



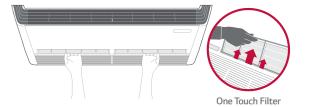
Powerful Cooling & Heating

High ceiling mode provides powerful cooling and heating up to 4.2m in height from floor, 15m away from ceiling.



One Touch & 2 Piece Filter

Easy in / out filter structure as well as a simplified two-piece filter, which slides out for easy cleaning and maintenance.



Two Thermistors Control

Users can purchase a wired remote controller that includes a second thermistor, allowing for temperature checks from multiple locations.



KEY FEATURES

CONSOLE & FLOOR STANDING



|SMART|

Wi-Fi Control

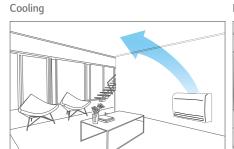


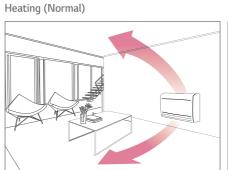
Access your air conditioner anytime and from anywhere.

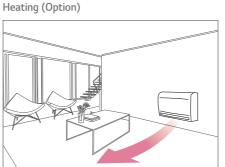
| COMFORT(CONSOLE) |

Air Flow Direction Change

During the cooling operation, the vane adjusts upwards to direct the air flow towards the ceiling. When heating, the vane directs the warm air downwards to balance the room temperature especially for floor.

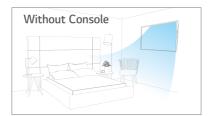






Cold Draft Protection

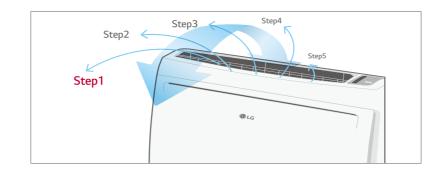
The console protects cold draft from windows to provide comfortable environment.





5-Step Vane Control

There are 5 different stages to control air flow direction.

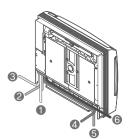


| COMFORT(CONSOLE) |

6 Way Flexible Piping

It is possible to install and connect the outdoor unit in 6 different ways. (Right Side, Right Back, Right Floor, Left Side, Left Back, Left Floor)

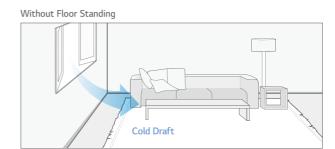


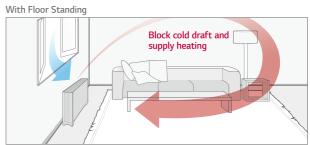


| COMFORT(FLOOR STANDING) |

Protect Cold Draft

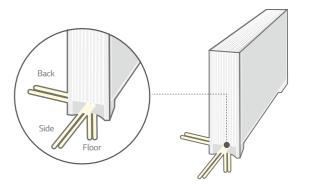
The floor standing unit protects cold draft coming from window and preventing condensation.





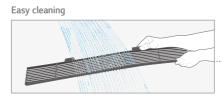
3 Way Flexible Piping

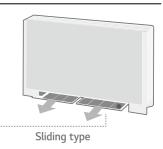
It is possible to install and connect the outdoor unit in 3 different ways (Side, Back, Floor).



Sliding Type Filter

Easy maintenance and extended product life with sliding type filter.





PRODUCTS

KEY FEATURES FOR INDOOR UNITS

HYDRO KIT



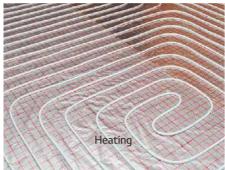
Features & Benefits

- Lower operation cost compared to fossil fuel-based systems such as boilers.
- More energy saving through MULTI V heat recovery system.

Key Applications

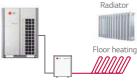
• Where Hot Water is needed such as domestic Hot Water, In-floor or radiant heat. Where cold water is needed such as Fan coil unit and chilled beam.

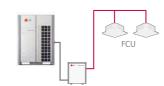






Radiant Heating / Cooling

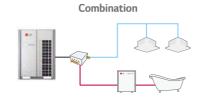




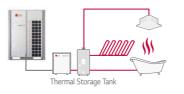
Fan Coil Unit Heating / Cooling



Hot water+ Radiant heating



HR unit (Cooling & Hot water)

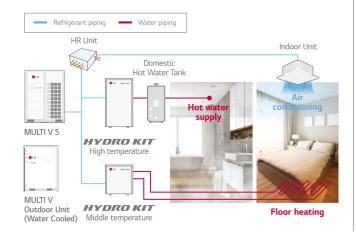


Thermal Storage System

| CONVENIENCE |

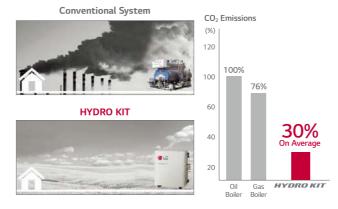
Total Solution

Total solution provided with heat pump, air conditioning (Cooling by refrigerant and cold water / heating by refrigerant hot water) and domestic hot water supply.



Eco-friendly Solution

Green energy solution through the reduction of CO₂ emmisions.

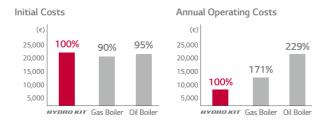


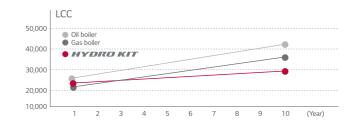
| EFFICIENCY |

Cost Savings with High Efficiency

Equivalent installation cost of traditional boiler with reduced operational costs.

KEY FEATURES





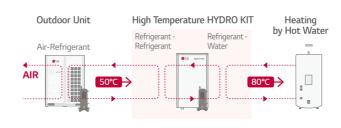
Energy Savings through Heat Recovery

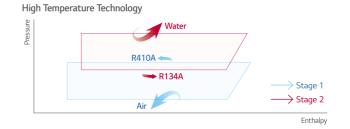
Energy costs can be minimized by reusing the wasted heat from indoor units.





High Temperature HYDRO KIT Cycle Diagram

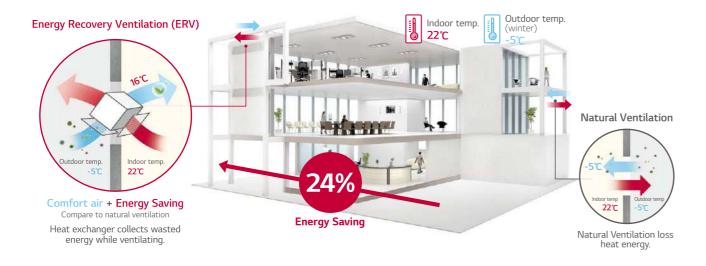




ENERGY RECOVERY VENTILATION (ERV)



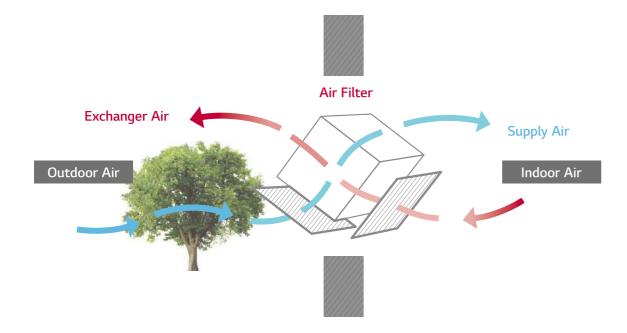
NECESSITY OF ERV



| HIGH EFFICIENCY |

High Efficiency Heat Exchanger

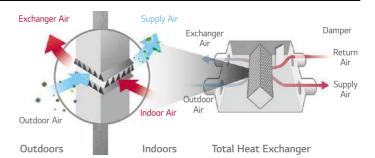
Efficiency and comfort is ensured through the high-efficiency energy recovery central core which recovers energy from the indoor air and transfers it to the fresh incoming air without mixing the air stream.



| EFFICIENCY |

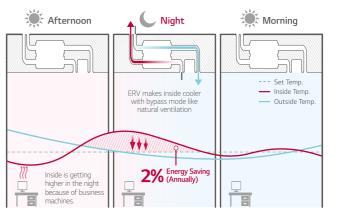
Exhaust System

The exhaust system uses a high static sirocco fan to effectively remove contaminants from indoor air. Supply and exhaust air flows are completely separated in the heat exchanger, allowing the LG ERV to filter out impurities before supplying outdoor air to ensure indoor air is fresh and healthy.



Night Time Free Cooling

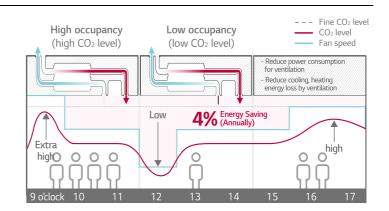
During summer nights, indoor heat can be discharged outdoors and cool outdoor air can be brought indoors for energy savings.



- ** This function is operated with 'Night Time Free Cooling' on remote controller (with MULTI V only)
 ** Energy saving ratio can be differed by weather condition.
 ** Test Condition
- iest Conflitton Office (49,000ft²) / Occupancy : 30 / Area : London, UK ERV (1000 CMH) + MULTI V 4 (12HP) Unit Combination Other conditions are subject to BREEAM.

CO₂ Auto Operation

LG ERV reduces energy loss with auto fan speed control following CO2 level



- $\ensuremath{\mathbb{X}}$ This function is operated with 'Night Time Free Cooling' on remote controller.
- Will MUCH Villy)

 *E Energy saving ratio can be differed by weather condition.

 *Test Condition Office (49,000ft²) / Occupancy: 30 / Area: London, UK ERV (1000 CMH) + MULTI V 4 (12HP) Unit Combination

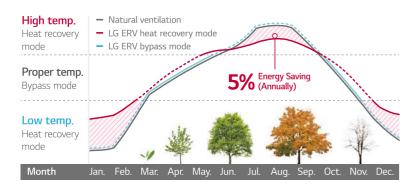
ENERGY RECOVERY VENTILATION (ERV)

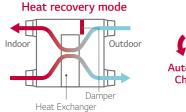


| EFFICIENCY |

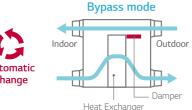
Seasonal Auto Operation

LG ERV senses outdoor temperature and operates automatically following weather condition.









- This function is operated with 'Auto' mode by wired remote control.
- Energy saving ratio can be differed by weather condition.

 Test Condition: Office (49,000ft²) / Occupancy: 30 / Area: London, UK
 ERV (1,000 CMH) + MULTI V 4 (12HP) Unit Combination Other conditions are subject to BREEAM.

| COMFORT & RELIABILITY |

CO₂ Level Monitoring

CO₂ sensor senses CO₂ level in the room. Users can monitor CO₂ level on new wired remote controller, and ERV controls the fan speed automatically following the level.

CO₂ Level Visualization

CO₂ sensor senses indoor CO₂ level and displays it on new wired remote controller.



If the CO₂ level is above 900ppm in



Further information

CO₂ level and room condition are

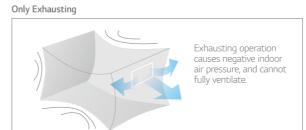


KEY FEATURES

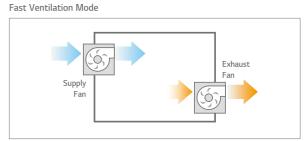
| CONVENIENCE |

Fast Ventilation Mode

Fast ventilation mode prevents the spread of contaminants under negative indoor pressure, and makes indoor air fresh and comfortable quickly.

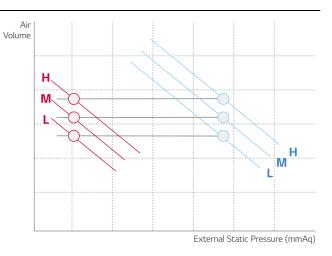






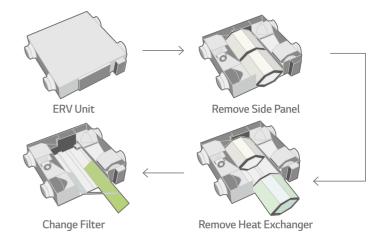
External Static Pressure Control

The high static pressure fan can control the air volume depending on the length of the duct. It is also easy to control the pressure level by using the remote controller for a more flexible duct installation and easier testing.



Easy Cleaning and Filter Change

Filter can be conveniently changed and cleaned.





KEY FEATURES FOR INDOOR UNITS

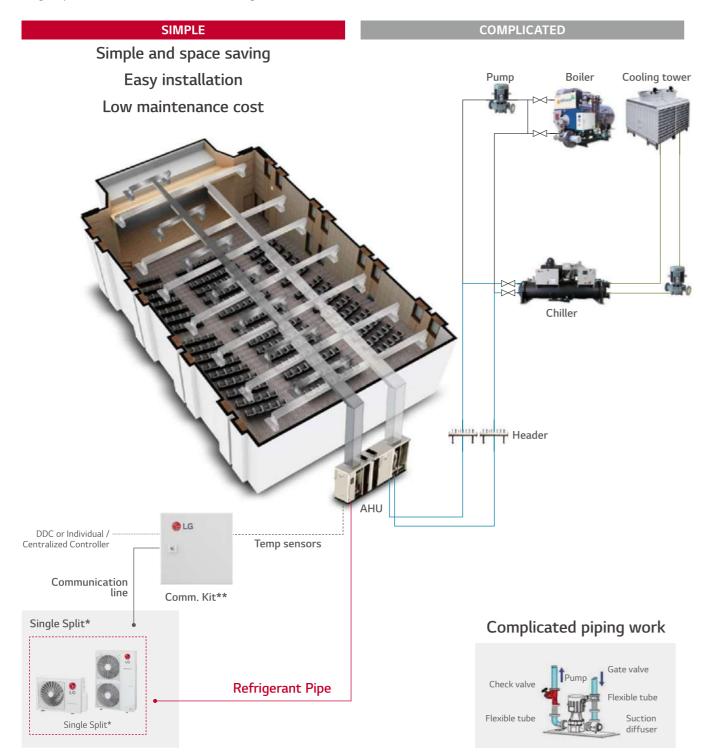
AHU COMBINATION



| AHU COMBINATION |

Connection with AHU (Single Split)

Single split can be connected to AHU using communication kit.



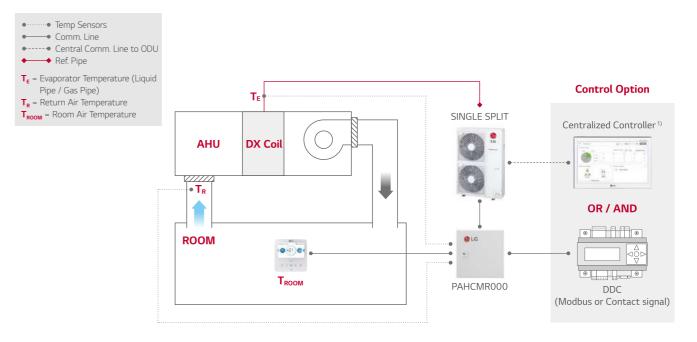
- * The single model can be applied only to UUB1, UUC1, UUD1, UUD3
- ** Model name of communication kit
- RA air temperature control : PAHCMR000
- SA air temperature control : PAHCMS000

| AHU COMBINATION |

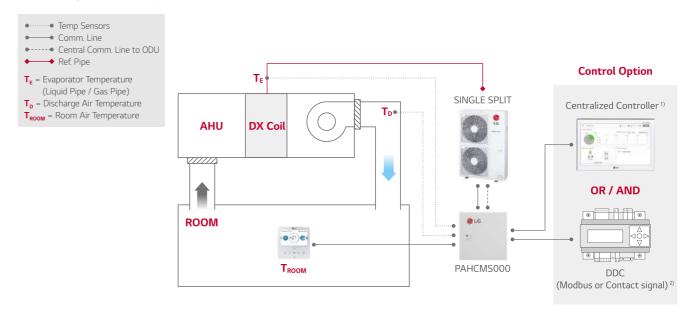
Air Handling Applications

Economically feasible solution for pair application with air handling units.

Return/Room Air Temperature Control



Discharge Air Temperature Control



- 1) PI485(PMNFP14A1) is required for using centralized controller.
- 2) In case of applying DDC with contact signal, discharge air temperature should be measured and controlled by DDC
- 3) For more detail, please refer to the PDB of AHU Communication Kit.

MAIN TECHNOLOGY



| EXCELLENT PERFORMANCE & EFFICIENCY |

Low GWP Refrigerant R32



Background

Due to accelerated global warming and the destruction of the ozone layer, various international conventions and meetings are held to enhance restrictions to the use of refrigerant or enforce the us of eco-conscious refrigerant R32 is internationally acclaimed for being eco-friendly. This low volume refrigerant is as efficient as any conventional refrigerant but boasts a 68% reduced global warming potential.



* Applied model: R32 Series

Comparison & Benefit

R32 efficiently works even in small volume compared to existing R410A refrigerant, which decreases the potential hazard of global warming. Furthermore, R32 refrigerant is easy to recycle thanks to its single composition.

Description	R32	R410A			
Low Global Warming Potential (GWP)	675	2088			
Lower Amount of Gas Charge	Less Less	O% High			
Higher System Performance	R32 systems also use less refrigerant per kilowatt of capacity delivered.				
Simple Refrigerant Recyclability	Single component Mixture R32 50%/R125 50%				
ト フ High Capacity	High refrigerant compression rates lead to high capacity as compared to existing refrigerant R22 and R410A.				

Note: Ensure the LG Electronics installation manuals are consulted for correct installation measures and safety precautions.

Flash Gas Injection

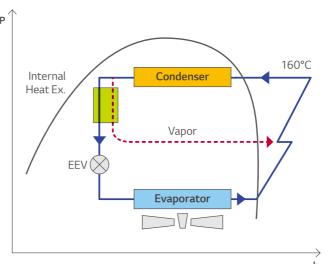
When applying R32 refrigerant to heat pump, it is very important to properly control the discharge temperature of the compressor. With the LG THERMA V R32 series, flash gas injection technology is applied to control the discharge temperature of the compressor efficiently. As a result of this technology, the heating operation range is expanded and the heating performance at low ambient temperature is enhanced.

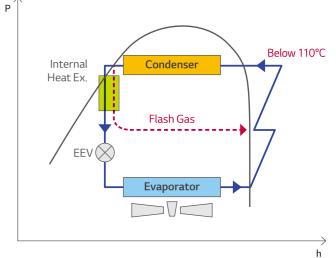
* Applied model: R32 Series

Vapor Injection Flash Gas Injection

• Discharge temperature of compressor is very high (160°C)

- Failure of injection cycle and compressor operation under protection logic
- Discharge temperature of compressor is below (110°C)
- Good operation of injection cycle

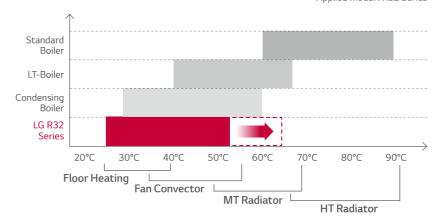




Wide Operation Range

With a Leaving Water Temperature (LWT) of up to 65°C, the THERMA V R32 series can integrate with a mid-temperature radiator, making this product line-up highly competitive for renovations as well as new build houses.





MAIN TECHNOLOGY



| EXCELLENT PERFORMANCE & EFFICIENCY |

Black Fin Heat Exchanger



The THERMA V line-up includes a heat exchanger enhanced by black coating with enhanced epoxy resin for strong protection from various corrosive external conditions such as salt contamination and air pollution including factory fumes. This improvement in durability prolongs the product's lifespan and lowers both the operational and maintenance costs.

* Applied model: R32 Series and High temp..



Longer lifespan, lower operation costs



Strengthened corrosion resistant coating

Black Fin

Hydrophilic Film (water flow)

The hydrophilic coating minimizes moisture build up on the fin.

Acryl + Epoxy + Melamine Resin (corrosion resistant)

The black coating provides strong protection from corrosion.

Aluminum Fin





SST (Salt Spray Test)

• Test Process



Test process is conducted according to ISO 9227.

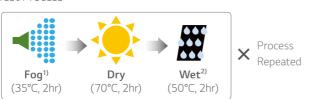
1) Salty water concentration: NaCl aqueous solution (5%)

• Test Result (5% area of defects compared to initial)



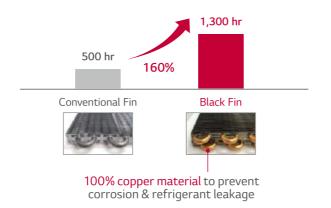
CCT (Cyclic Corrosion Test)

• Test Process



Test process is conducted according to ISO 14933.

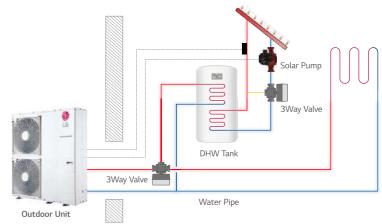
- 1) Salty water concentration: NaCl aqueous solution (5%)
- 2) Deionized water
- $\stackrel{.}{\times}$ Dry condition changed : 60°C, 4hr \rightarrow 70°C, 2hr
- Test Result (5% area of defects compared to initial)



* Applied model: R32 Series, R410A Split Hydro Box

Combination with Solar Thermal System

THERMA V can combine with the solar thermal system enabling water heating in the Domestic Hot Water (DHW) tank. It first measures the temperature difference between the solar collector and DHW tank and begins to heat up if the solar collector temperature is higher than the DHW tank.



- * Applied model: R32 Series, R410A Split Hydro Box
- * Mandatory accessory: Solar Thermal Kit (PHLLA) is required except for R32 Hydrosplit which needs PT-1000 type sensor (field supply).

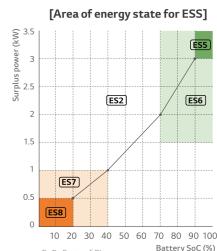
Energy State

THERMA V is operated automatically according to the status signals received from power supply companies. This function can correspond to each country's specific tariff for heat pump application on smart grids.

* Applied model : R32 Hydrosplit, R32 Monobloc, R32 Silent Monobloc R32 IWT, R32 split, R410 split and High Temp. models have limited energy state function (ES1 ~ ES4 only). For more detail, please refer to the installation manual.

Description						
Energy	Smart Grid	(Contact)	ESS (Modbus)		0 .: 14	
States	Operation Mode	Power Supply Status	Operation Mode	Battery Charged Status	Operating Mode	
ES1	Operation Off				Forced off to avoid peak load	
ES2	Normal		Normal		Normal operation	
ES3*	On Recommend				Changed target temperature higher (Heating: +2°C / DHW: +5°C)	
ES4*	On Command				Changed target temperature higher (DHW:80°C)	
ES5**			On Command (Step2)		Changed target temperature higher (Heating: +5°C, Cooling: -5°C, DHW: +30°C)	
ES6**			On Recommend (Step1)		Changed target temperature higher (Heating: +2°C, Cooling: -2°C, DHW: +10°C)	
ES7**			Energy Saving		Changed target temperature lower (Heating: -2°C, Cooling: +2°C)	
ES8**			Super Energy Saving		Changed target temperature lower (Heating: -5°C, Cooling: +5°C)	

- * Contact signal designated ES3 and ES4 can be changed to ES5 ~ ES8.
- ** Offset values of heating, cooling and DHW are changeable.
- *** Therma V can connect not only ESS but also 3rd party controller through Modbus, in that case, ES1 to ES8 are used.



- SoC : State of Charge
- Surplus Power (SP) = PV Power Load Power
 Area of Energy State for ESS can be adjusted by ESS.

204 | 205

KEY FEATURES FOR THERMA V

MAIN TECHNOLOGY



| USER CONVENIENCE |

Controller with Intuitive Interface

THERMA V is equipped with new remote controller which supports various functions.

* Applied model: R32 Series, R410A Split Hydro Box, High Temp.

Premium Design

- New modern design 4.3 inch color LCD display
- Capacitive touch button (especially on/off button turn on LED)

User Friendly Interface

- Information displayed with simple graphic, icon & text
- Navigation button, easy to use







Enhanced Energy Information with Simple Interface

- A clear view of instantaneous power consumption against target
- Accumulated power consumption and produced heat energy per week, month or year







Convenient Functions

- Optimize schedule setting logic
- Set the period, date, on/off time, operation mode, target temp. easy installation setting



LG Own Wi-Fi Solution

Access your THERMA V anytime from anywhere.



* Applied model: R32 Series, R410A Split Hydro Box, High Temp.



- * Search "LG ThinQ" on Google market or App store, then download the app.
- * Google home voice is supported in United Kingdom, France, Germany, Spain, Italy, Austria, Ireland and Portugal.
- * Mandatory accessory: PWFMDD200 (LG Wi-Fi modem) and PWYREW000 (10m extension connect cable in between THERMA V indoor and Wi-Fi modem)







Simple Operation by LG ThinQ

- Operation on/off
- Operation mode selection
- Current temperature
- Temperature setting
- On/off reservation
 Scheduling
- Energy monitoring
- ESS monitoring
- Silent mode reservation
- Holiday mode
- Quick DHW heating

Simple Operation by Google Voice

- Operation on/off (including DHW heating)
- Operation mode selection



MAIN TECHNOLOGY

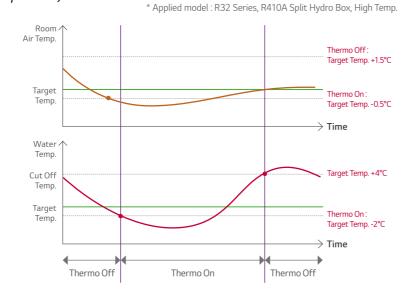


| USER CONVENIENCE |

Various Temperature Control Options

Various temperature control options are possible for the user's comfort and convenience, to include the newly added simultaneous control option (room and water temperature).

- Control based on leaving water temperature
- Control based on entering water temperature
- Control based on room air temperature
- Control based on room air and water temperature simultaneously
- Thermo On : When satisfied both room air temp condition and water temperature condition
- Thermo Off: When satisfied room air temp condition or water temperature condition



Advanced Pump Control Options

* Applied model: R32 Hydrosplit

Various pump control options are possible for the user's convenience. With the R32 Hydrosplit, the water flow rate can be changed as per heat load condition, therefore it makes more energy efficient operation during low load condition.



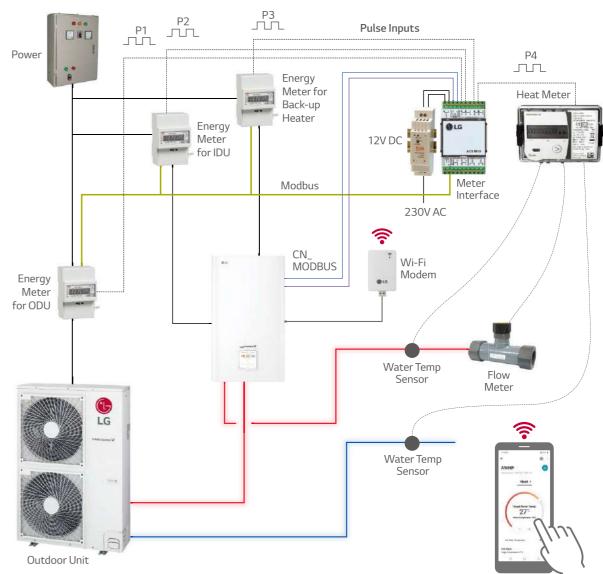
Options	Description	Water Flow Change as per Load Condition		
Pump Capacity	It operates with the capacity set for the water pump. (range 10 ~ 100%)	No		
Fixed Flow Rate	Automatically controlled to maintain the set flow rate. (range 17 ~ 46 LPM)	No		
Fixed ∆T*	Automatically controlled to maintain the set ΔT . (range 5 ~ 13°C)	Yes		
Optimal Flow Rate (default)	ΔT is changed as per target temperature.	Yes		

^{*\}DT = temperature difference between inlet and outlet water temperature.

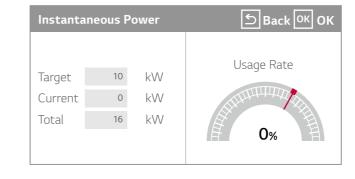
Energy Information Monitoring

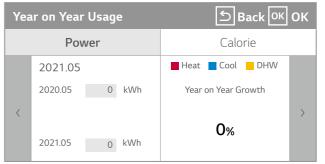
* Applied model : All Line-up except R410A IWT

Power consumption and heat provided by the THERMA V can be measured and monitored on the remote controller using meter interface.



^{*} Mandatory accessory : PENKTH000 (Meter Interface)





KEY FEATURES

MAIN TECHNOLOGY



Outdoor Air Temperature

| USER CONVENIENCE |

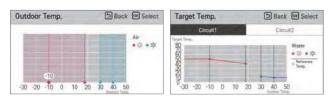
Seasonal Auto Mode

In this mode, the target temperature and operation mode will be changed automatically according to the outdoor temperature.

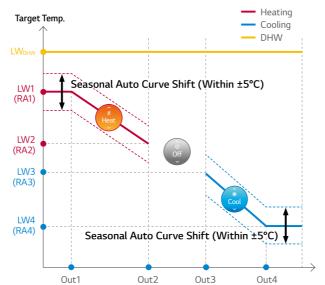
* Applied model: R32 Series, R410A Split Hydro Box Detailed set values and ranges are differ by product. For more detail, please refer to the installation manual for each product.

Setting	Description	Range (°C)		lt (°C) Circuit 2	
Out1	Heating Lower Ambient Temp.	-25~35	-10		
Out2	Heating Higher Ambient Temp.	-25 ~ 35	18		
Out3	Cooling Lower Ambient Temp.	10. 46	3	30	
Out4	Cooling Higher Ambient Temp.	10 ~ 46	40		
LW1	Heating Higher Water Temp.	Use Heater: 15 ~ 65	50	35	
LW2	Heating Lower Water Temp.	No Heater: 20 ~ 65	40	28	
LW3	Cooling Higher Water Temp.	Use FCU: 5 ~ 27	12	18	
LW4	Cooling Lower Water Temp.	No FCU: 16 ~ 27	10	16	
RA1	Heating Higher Air Temp.	16~30	21		
RA2	Heating Lower Air Temp.	18 ~ 30	19		
RA3	Cooling Higher Air Temp.	18 ~ 30	21		
RA4	Cooling Lower Air Temp.	18 ~ 30	19		





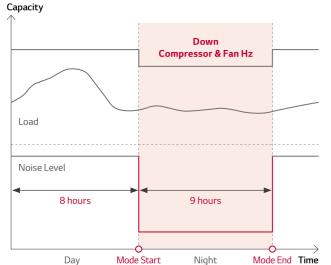




Low Noise Mode & Scheduler

Low noise mode operation can be activated by remote controller and set on a weekly on/off schedule to reduce the unit's noise level.

* Applied model : A ll Line-up except High Temp

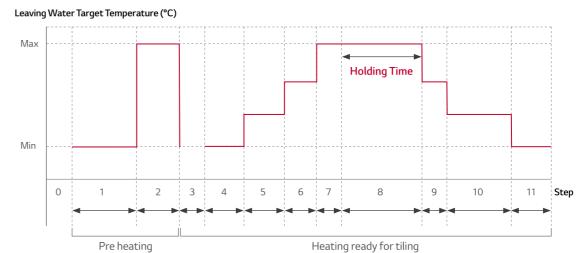




Screed Drying Program

THERMA V has an automatic program for drying out the screed of an underfloor heating system during the construction of a house.

* Applied model: R32 Series, R410A Split Hydro Box



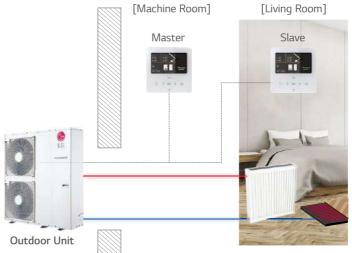
Step	1	2	3	4	5	6	7	8	9	10	11
Leaving Water Target Temperature (°C)	25	Max T	Off	25	35	45	Max T	Max T	45	35	35
Duration (Hours)	72	96	72	24	24	24	24	Holding Time	72	72	72

2 Remote Control

Enhanced convenience with an additional control installed in another residential area.

* Applied model : All Line-up except R410A IWT

System Diagram [Machine Room]



- * Master is for the installation setting.
- * Slave is for user setting.

Standard III (RS3) controller interface

• THERMA V is operating based the room where slave controller is installed.



Room air temperature sensed by slave remote controller



KEY FEATURES FOR THERMA V

MAIN TECHNOLOGY



| EASY INSTALLATION & MAINTENANCE |

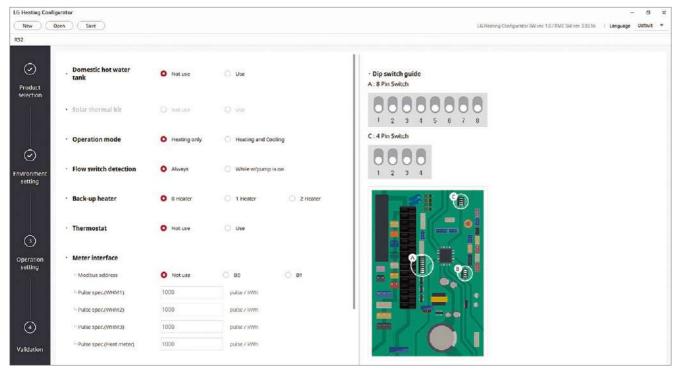
LG Heating Configurator

* Applied model: R32 Series, R410A Split Hydro Box R32 IWT, R32 Hydrosplit will be supported within 2020.

Easy Installation Setting and Commissioning

- Based on installation site information, installers can prepare presetting with the LG heating configurator and save data into a memory card from the office.
- Once on site, installers can simply insert memory card into the back of the remote control to activate configuration data.

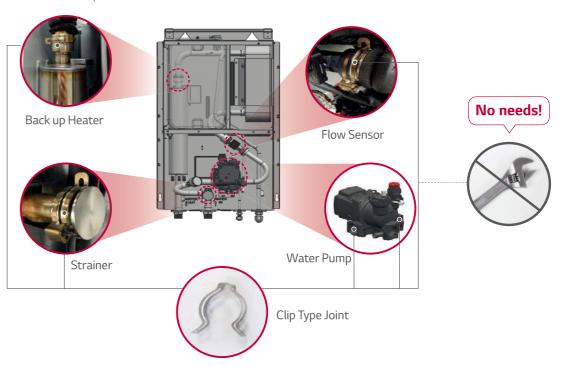




Clip Type Connection for Easy Maintenance

* Applied model : R32 Series, R410A Split Hydro Box

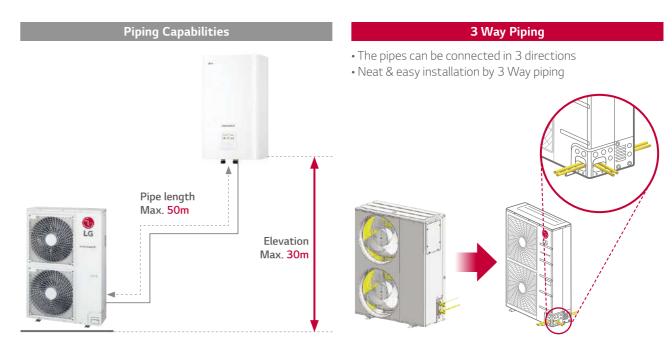
- Easy access to water pump and strainer (front panel)
- Clip type connection for components



Flexible Refrigerant Piping Design

Long piping length and 3 Way piping enable flexible design and easy installation.

* Applied model : R32 IWT, R32 Split, R410A Split, R410A IWT, High Temp.



INVERTER SCROLL CHILLER



| HIGH EFFICIENT INVERTER TECHNOLOGIES |

All inverter scroll compressor

All inverter scroll compressor with HiPOR™ (Patent) is applied to improve full load and part load energy efficiency.

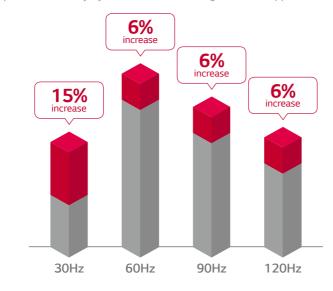
All Inverter System

Wide operation frequency range 30 ~ 130Hz

HiPOR[™] (Patent) Maximizing reliability and efficiency of the compressor through recovering oil in compressor directly Compressor Inverter130Hz Inverter130Hz

Compressor Efficiency

Compressor efficiency by Hz is increased through HiPOR™ application

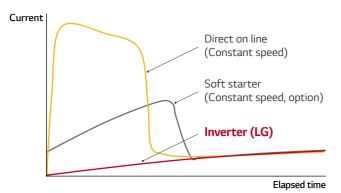


※ Test condition at Tc=54.4°C, Te=7.2°C

App. Inverter comp. vs Constant speed comp.

Inverter compressor is more stable and efficient solution than Constant speed compressor.

Comparison of starting type



Compressor	Starting type	Starting current (Is / FLA*, %)
Constant	Direct on line	About 650 %
speed	Soft starter	200 ~ 350 %
Inverter (LG)	Inverter	No inrush current

* FLA : Full load ampere

• Inverter's feature & benefits

WHEN STARTING

- Reduce starting torque below full load torque
- Mechanical wear↓
- Decrease starting current under FLA
- **→** Circuit breaker capacity↓

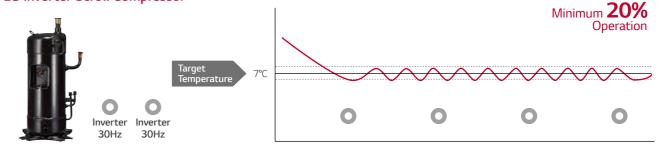
WHEN OPERATING

- Low electric loss due to high value of the power factor**
- **➡** Energy efficient
- Low power input in part load
- High SEER
- Continuously adjust compressor output according to the load (Compressor 15~125Hz)
- Save energy
- ** Power factor : Ratio between active power(kW) and total power(kVA)

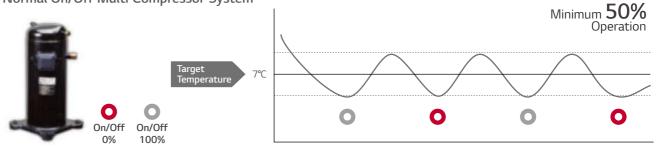
Lower load operation

20% part load operation and minimized water outlet temperature haunting with Inverter scroll compressors.

• LG Inverter Scroll Compressor



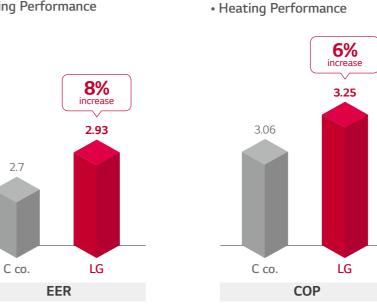
• Normal On/Off Multi Compressor System

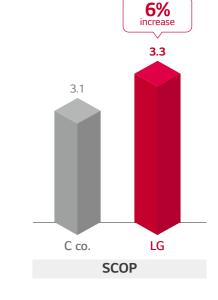


High Energy Efficiency

All inverter scroll compressors with Multi V technologies improve energy efficiency.

Cooling Performance





% 65 kW Heat pump model comparison

PRODUCTS

INVERTER SCROLL CHILLER

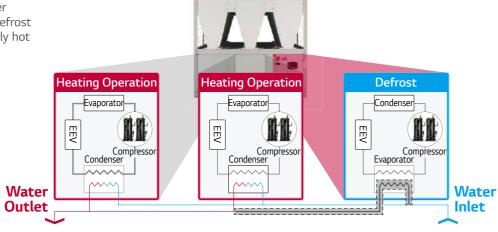


| RELIABILITY & STABILITY |

Continuous heating operation

Continuous heating minimizes the decrease of water outlet temperature during defrosting for multi circuit model.

Multi cycle can defrost each cycle individually to supply hot water continuously multi cycle can defrost each cycle individually to supply hot water continuously



^{*} Applied up to 6 scroll compressors per refrigerator

Back up operation

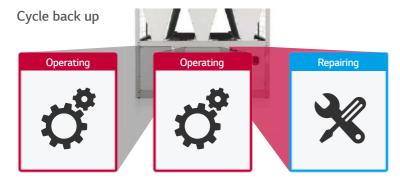
If one compressor or one cycle has a trouble or needs to be repaired, backup operation helps the whole system to operate continuously.

Compressor back up









KEY FEATURES

Corrosion resistance (Black Fin)



'Black Fin' heat exchanger is highly corrosion resistant, designed to perform in corrosive environments such as contaminated and humid condition.

Black box function

Quick service can be done because operation data can be saved for 180 seconds before system failure.

Without Black Box Function

Check many failure causes and error codes in person



Take much service time and undergo trial and error

With Black Box Function

Search for the failure cause conveniently using recorded data



Save service time and diagnose it more accurately



* 222kW comparison

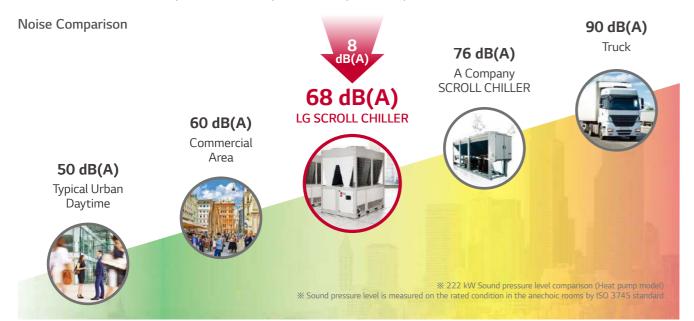
INVERTER SCROLL CHILLER



| INVERTER SCROLL CHILLER CONVENIENCE |

Low noise level

Lower noise can remove complains from noise pollution and provide a quieter environment.



HMI Touch Controller

High level control option is preinstalled such as cycle monitoring, schedule control and demand control with HMI touch

User Friendly HMI Touch Controller



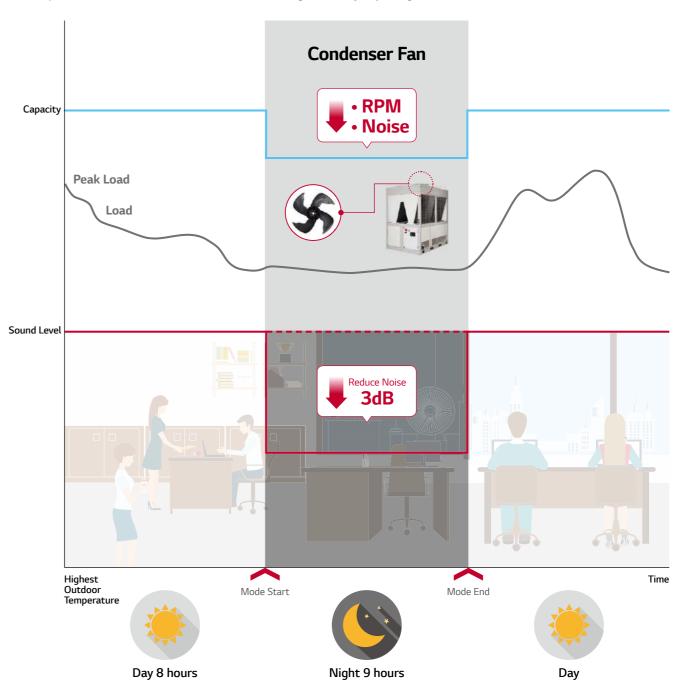
 Checking chiller information (Pump / Flow Status, Pump On / Off, Flow Switch On / Off Etc.)

- Monitoring chiller operation (Each Cycle Operation Status, Air Temperature Etc.)
- 5 chillers multiple control
- Scheduling function
- Anti-freezing function / displaying error history etc.
- RS485 1Port, SD Card (Memory)

Mounted in unit

Silent operation function (Cooling Mode)

Silent operation function can reduce noise levels at night time by adjusting the fan RPM



% 65kW Comparison



KEY FEATURES

KEY FEATURES FOR APPLIED

INVERTER SCROLL CHILLER



| INVERTER SCROLL CHILLER CONVENIENCE |

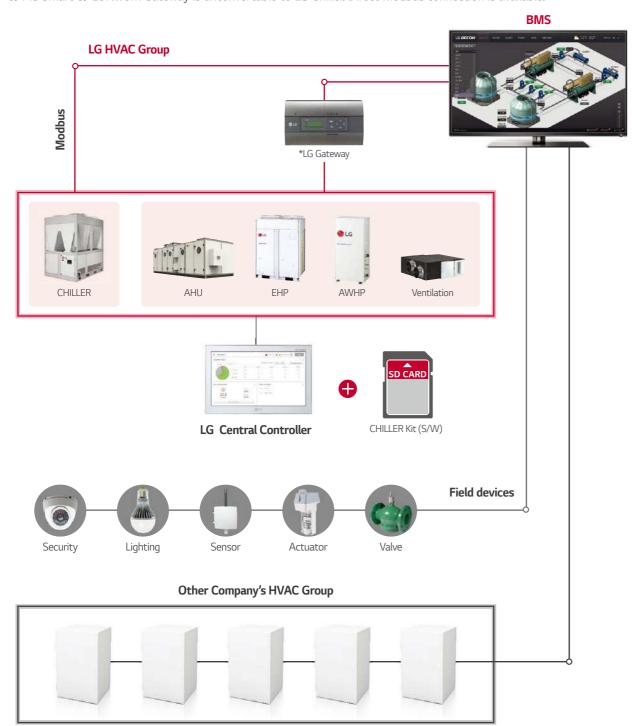
Easy BMS interface

LG provides CHILLER controller system and BMS communication function.v

LG HVAC Group

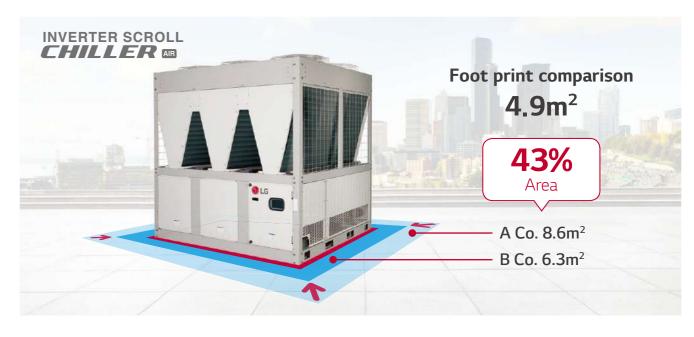
BMS: Building Management System

*ACP 5/ AC Smart 5/ LONwork Gateway is unconvertable to LG Chiller. Direct Modbus connection is available.



Compact size

Compact size reduces concern about installation and service space.



Centralized control of LG Chiller (option)

LG central controller 5 series (+Chiller kit) provide chiller remote control and cycle monitoring (ACP IV : Max. 10 chillers , AC Smart 5 : Max. 5 chillers).



Unit · dB(A)

FCU (FAN COIL UNIT)



| 4WAY CASSETTE |

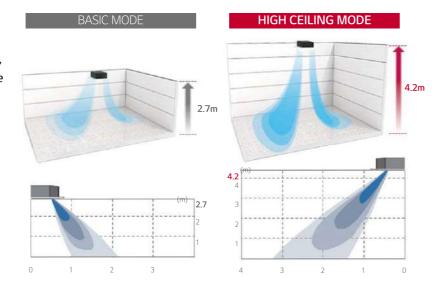
Wi-Fi Remote Control



Control your air conditioners using the smart devices as Android or iOS based smartphones and voice commands via Google assistant.

High Ceiling Mode

Airflow in a space with a 4.2m ceiling height is possible with this indoor unit. Furthermore, air flow can be strengthened by adjusting the fan speed.



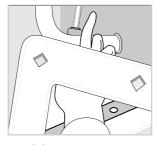
Convenient Panel Installation

The detachable corner design makes it easy to adjust the hanger during installation and helps to easily check leakages in the drain connection pipe. Moreover, button type holder design makes it is easy to install the panel to the body.

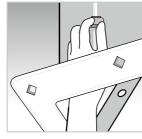




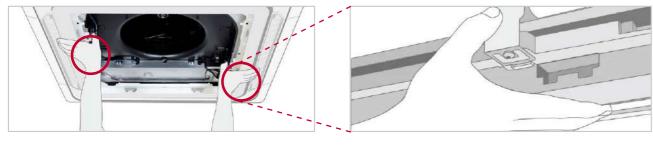
Drain Leakage Check



Hanger Adjust



It is easy to install the panel to the body, using the button type panel design.

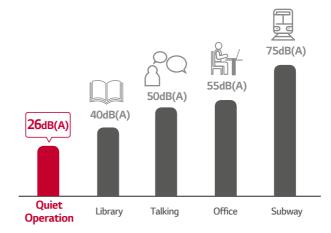


| LOW ESP DUCT |

Quiet Operation

The noise level of Low EPS Ducts does not interfere with conversation at all.

KEY FEATURES



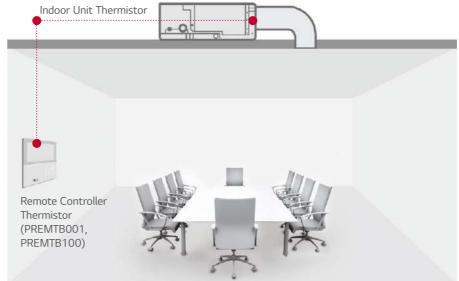
						011	ic. ab(//)
	1 Fan						
Sound Pressure (High/Medium/Low)	31/30/29	33/32/31	31/30/29	33/32/31	28/27/26	31/28/26	38/34/31

- * Test condition Temperature : (Cooling) 27°C DB / 19°C WB, 35°C DB / 24°C WB
- * Based on Low speed of WFCA039RG0A, WFCA055RG0A model
- $\mbox{\ensuremath{^{\star}}}$ Sound level may vary depending on the place or surrounding conditions in which the equipment is installed

| LOW ESP DUCT |

Two Thermistors Control

The indoor temperature can be checked using the thermistors in the remote controller as well as from the indoor unit. Two thermistors can check the optimal indoor air temperature for a more comfortable environment.



Compares temperatures sensed from different positions, and automatically selects the optimal temperature for users.

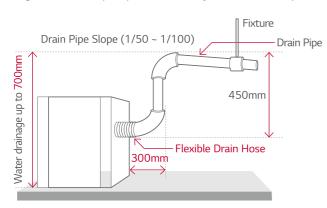
FCU (FAN COIL UNIT)

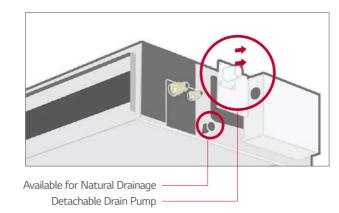


| LOW ESP DUCT |

High Head Drain Pump

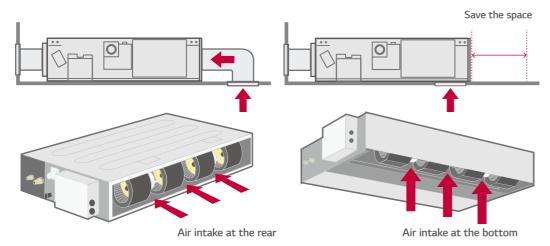
High head drain pump automatically drains water up to a height of 700mm of drain-head height.





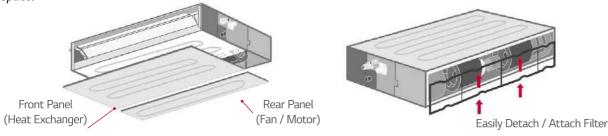
Flexible Installation

LG's Low ESP Duct FCU allows air intake from the rear or the bottom sides according to requirements.



Easy Service & Maintenance

Service engineers don't need to open the whole panel for maintenance, since the panel is divided into 2 components; one for heat exchanger and the other for fans/motor. User can easily detach and re-attach the air filter in the available limited space.



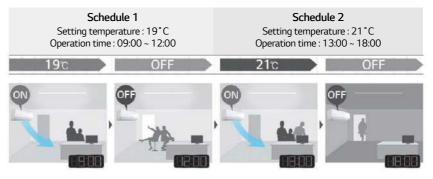
PRODUCT INTRODUCTION KEY FEATURES COMPARIS

| CONVENIENT FUNCTIONS |

You can set 2 schedules for one day, and up to 14 schedules for a week.



- Schedule can be set daily and weekly.
- Depending on the type of wired remote controller, the number of schedules that can be set varies.



*This function is for wired remote controller only.
*Wired remote controller need to be purchased separately.



- Daily 5 schedules

- Up to 35 schedules for a week





Standard III - Up to 30 schedules for one day or a week

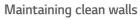
Standard II - Daily 2 schedules

Group control with One Remote Controller

Up to 16 FCUs can be controlled with one wired remote controller. It can be reducing factor for installation costs and keeping wall interiors clean.



- On / Off
- Mode Selection (Cooling / Heating / Fan / Dehumidification)
- Fan Speed (High / Med / Low)
- Time Setting Etc.





Individual Control

Group Control

Controller & installation cost saving



* If you set up to 'Installation Setting' > Group Control 'Enabled' in your Wired Remote Controller, you can use many more functions.

FCU (FAN COIL UNIT)



| CONVENIENT FUNCTIONS |

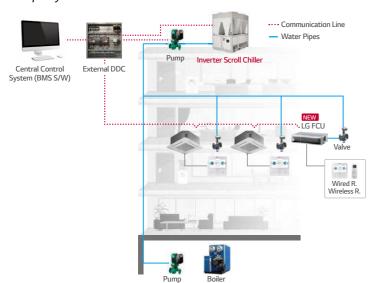
Easy Control (Simple Test Run via LGMV)



LG MV (Monitoring View) helps engineers to inspect and monitor LG's air conditioning unit easily.

Individual Control & External Central Control

It allows not only to control each room by using the remote controller, but also apply integrated control through a 3rd party central controller.

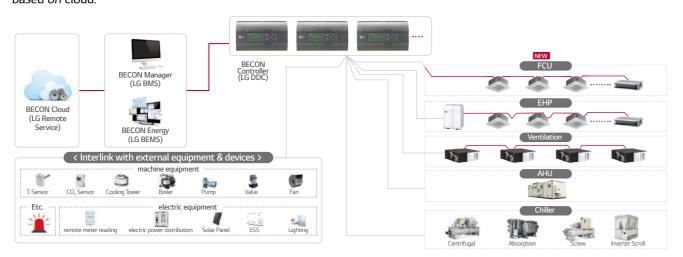


- Wired/Wireless Remote Controller in each space
- On / Off / Temperature Setting
- Adjusting the vane angle
- Individual Valve Control from FCU
- Interlocking with 3rd party automatic controllers through Modbus communication

| CONVENIENT FUNCTIONS |

BECON Building Solution (LG Building Management System)

LG's Automatic Control (BECON) enables the overall facility control and energy management of buildings, including machinery and electrical equipment, as well as control of LG's equipment. BECON also enables remote services based on cloud.



KEY FEATURES

KEY FEATURES FOR ESS

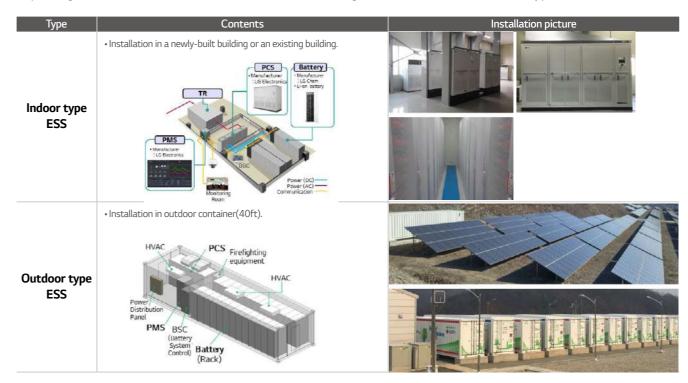
LG ESS SOLUTION



| COMMERCIAL & INDUSTRY APPLICATION |

ESS Installation Type

Depending on the customer's installed environment, ESS is organized into indoor and outdoor types.

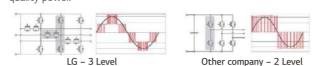


PCS (Power Conditioning System)

LG Electronics is able to provide high efficiency and reliable PCS to customers and meet the requirements of customers.

High efficiency circuit design

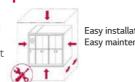
Applying 3-level topology, LG Electronics supports high efficiency and high





Compact size - Efficient space utilization

Compared to other companies, the compact size reduces the footprint and makes installation space more efficient. The power density is about 12% higher than other companies.





User friendly HMI¹⁾

LG Electronics supports the user-friendly HMI with LCD touch screen and UI



User friendly features Easy communication function

1) Human and Machine Interface

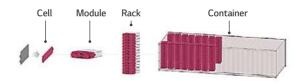
LG ESS SOLUTION

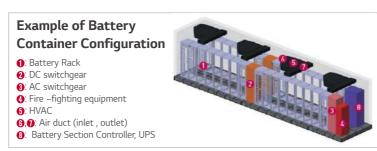


| COMMERCIAL & INDUSTRY APPLICATION |

Li-ion Battery

We provide most optimal energy solution for the user using our state-of-the-art energy storage system with a long lifespan and a top-notch quality.





Compactness & Long Lifespan

LG's L&S (Lamination & Stacking) process minimizes dead space, Enables higher energy density, and enhances the sustainability of cell structures.









Stable cell structure





Others: Winding

Safety

LG's SRS® (Safety Reinforced Separator) increases the mechanical And thermal stability of battery cells.



System Optimization

The high energy density and optimal dimensions of our new generation of Energy Cell (JH3) have allowed us to radically improve the efficiency of pack design.

PMS (Power Management System)

High reliability is ensured by using Becon S/W which is designed by LG Electronics.



Monitoring and Analyzing

- Store bulk data at various points
- Broad compatibility with third party device



Easy to Use

- Provide solutions that meet customer needs
- Convenient user-oriented GUI



Optimized Algorithm

- Peak-shifting, Peak-cut, Frequency regulation, etc.
- Maximize revenue by optimized algorithm

Three-Phase Home ESS Solution

Premium three-phase ESS solution for European residential market



PV inverter & ESS PCS in one body

- · Highly efficient, compact size
- Easy installation

Compact design

• PCS volume (35.6%↓) and weight (26.5%↓) reduction

Scalable capacity

• 6.4kWh → 12.8kWh

[Example of Installation]

Three-Phase Home ESS Solution

[Three-MPPT]

Premium three-phase ESS solution for European residential market



[Battery combinations]

High power and back-up function

- · More solar and more power
- Emergency power supply

Battery capacity flexibility

• Using two-battery channel and battery pack Battery capacities are from 7kWh to 19.6kWh)

LG ESS SOLUTION



| COMMERCIAL & INDUSTRY APPLICATION |

Single-Phase LG ESS Home Solution

DC & AC coupled ESS solution for US residential market



[Example of Installation]

3 individual MPPT strings for PV arrays

• Design Flexibility , higher levels of harvested energy

AC-Coupled ESS

• For new & retrofit solar systems

Emergency power supply function

• Energy Independence by supplying enough backup time (Almost 4hrs with 5kW load)

COMPARISON WITH COMPETITORS

COMPARISON WITH COMPETITORS







PRODUCT COMPARISON | AIR COOLED VRF SIDE DISCHARGE

MULTI V S





COMPARISON WITH COMPETITORS



Key Specifications

Multi V S has superiority compared to competitor.

Comparison Items	MUL	TI V. s	D Cor	npany	
Phase	1ø	3ø	1ø	3ø	
EER (4/5/6HP)	3.53 / 4	.20 / 3.90	3.20 / 2.70 / 2.70	3.10 / 2.60 / 2.60	
COP (Rated) (4/5/6HP)	5.26 / 5	.15 / 4.80	4.29 / 4.07 / 3.71	4.52 / 4.28 / 3.90	
SEER (4/5/6HP)	8.10 / 8	.70 / 8.50	8.15 / 7.66 / 7.10	6.81 / 6.59 / 6.78	
SCOP (4/5/6HP)	4.70 / 4	.80 / 5.00	4.63 / 4.70 / 4.70	3.94 / 4.19 / 4.43	
Longest Pipe Length (4/5/6HP)	8	0m	70m	120m	
Total Pipe Length	30	00m	30	0 m	
Difference in height Indoor <-> Outdoor (Outdoor <-> Indoor)	30m	(15m)	30m (15m)	50m (15m)	
Compressor	Sc	roll	Swing	Rotary	
Volume	0.2	?6m²	0.36m²	0.39m²	
Weight (4/5/6HP)	65 / 72	2 / 72 kg	89kg	104kg	
Sound Pressure Level (4/5/6HP) (Cooling / Heating)		52 dB(A) 54 dB(A)	51 / 52 / 53 dB(A) -	50 / 51 / 51 dB(A) -	
Sound Power Level (4/5/6HP) (Cooling / Heating)		71 dB(A) 75 dB(A)	68 / 69 / 70 dB(A) 69 / 70 / 71 dB(A)	68 / 69 / 70 dB(A)	
Operation Range (Cooling / Heating)		8°C DB	-5 ~ 46°C DB -20 ~ 15.5°C WB		

EER / COP

LG Multi V S achieved high efficiency through technology of R32 Refrigerant and revolutionary scroll compressor while minimizing the size of outdoor unit.

COP (Heating)

5.26

4.52

23%

5.15

4.28 4.07

27%

4.80

29%

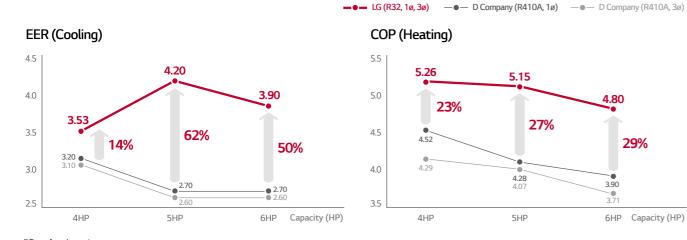
6HP Capacity (HP)

5.5

5.0

4.5

4.0





- D Company(1ø): 1 Fan D Company(3ø): 2 Fan



SEER / SCOP

Seasonal Efficiency of LG product is* higher than D Company. And all models' class is more than A++.

SEER (Cooling) SCOP (Heating) **—● LG (R32, 1ø, 3ø) —● — D Company (R410A, 1ø) —● — D Company (R410A, 3ø)** 9.5 4.80 8.70 9.0 4.7 13% 8.50 8.5 8.10 15% 8.0 4.4 19% 32% 25% 7.5 20% 4.1 7.10 Capacity (HP) Capacity (HP)

SEER / SCOP Class (ERP Regulation)

• Multi V S class

HP	4	5	6
CEED	8.1	8.7	8.5
SEER	A++	A+++	A+++
SCOP	4.7	4.8	5.0
SCUP	A++	A++	A++

• Energy Labeling (Europe Only)

HP	SEER	SCOP
A+++	SEER≥8.5	SCOP≥5.1
A++	6.1 ≤ SEER < 8.5	4.6 ≤ SCOP < 5.1
A+	5.6 ≤ SEER < 6.1	4.0 ≤ SCOP < 4.6
Α	5.1 ≤ SEER < 5.6	3.4 ≤ SCOP < 4.0
В	4.6 ≤ SEER < 5.1	3.1 ≤ SCOP < 3.4
С	4.1 ≤ SEER < 4.6	2.8 ≤ SCOP < 3.1
D	3.6 ≤ SEER < 4.1	2.5 ≤ SCOP < 2.8

Size

Multi V S volume is 28%(1ø), 33%(3ø) smaller than D Company.

* Source : https://www.eurovent-certification.com/

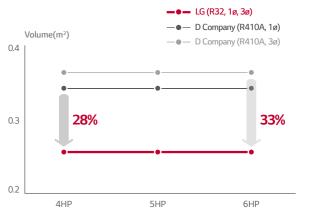
In Case of 1 Phase Model



In Case of 3 Phase Model







	HP	4	5	6
Volume	Multi V S	0.26	0.26	0.26
Comparison	D Company(1ø)	0.36	0.36	0.36
	D Company(3ø)	0.39	0.39	0.39

Unit: m²





Weight

Multi V S weight is 27%(1ø), 37%(3ø) lighter than D Company(based on 4HP model).

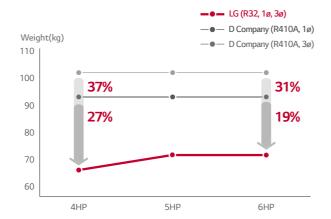
In Case of 1 Phase model



In Case of 3 Phase model







				UIIIL. Kg
	HP	4	5	6
Weight	Multi V S	65	72	72
Comparison	D Company(1ø)	89	89	89
	D Company(3ø)	104	104	104

Refrigerant Amount

Multi V S reduced refrigerant charge by applying environment-friendly refrigerant R32.

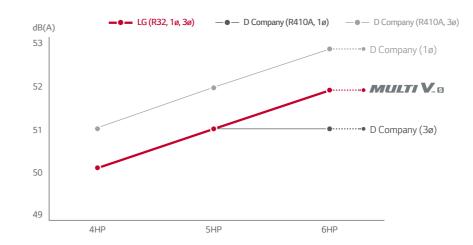
	НР	Company	Туре	Factory Charge	Field Additional Charge	Total	t-CO2 eq.	IDU			
		Multi V S	R32	1.5	2.19	3.69 (28%↓)	2.5 (77%↓)				
	4	D Company(1ø)	R410A	3.7	1.45	5.15	10.8	IDU: 7 kBtu/h * 5EA			
		D Company(3ø)	R410A	3.6	1.45	5.05	10.5				
Amount of Refrigerant	5	Multi V S	R32	2.0	2.54	4.54 (12%↓)	3.1 (71%↓)				
[kg]		5	5	5	D Company(1ø)	R410A	3.7	1.45	5.15	10.8	IDU: 9 kBtu/h * 5EA
				D Company(3ø)	R410A	3.6	1.45	5.05	10.5		
	6		Multi V S	R32	2.0	2.54	4.54 (12%↓)	3.1 (71%↓)			
		D Company(1ø)	R410A	3.7	1.45	5.15	10.8	IDU: 12 kBtu/h * 5EA			
		D Company(3ø)	R410A	3.6	1.45	5.05	10.5				

COMPARISON WITH COMPETITORS

Outdoor Unit Noise Level

Noise Level of Multi V S is reduced by 1 dB(A) compared to D Company(based on 1 phase model).

Sound Pressure Level (Cooling)



Uni	t : dB(A),	Source : D	ata Book
HP	4	5	6
Multi V S	50.0	51.0	52.0
D Company(1ø)	51.0	52.0	53.0
D Company(3ø)	50.0	51.0	51.0

Low Noise Operation

Multi V S Low-Noise Operation is possible regardless of the time where noise sensitive areas. This function can be set by users through remote controller.

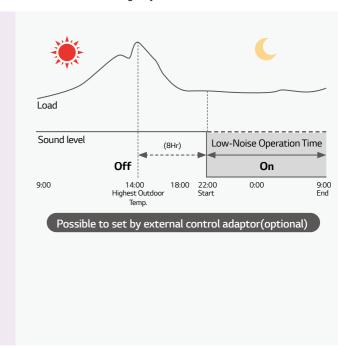
Multi V S

Standard III Wired remote controller setting possible

0 -21 0 Load Scheduled setting available Sound level Low-Noise Operation Off 14:00 Remote Controller Setting is Possible * Low-Noise Operation requires Standard III Wired Remote Controller. Off 794 17 : 8 794 Advanced fan speed "Auto"

D Company

Outdoor Unit setting only



^{*} This result can be different depending on actual environment







Dual Sensing

Multi V S has temperature sensor and humidity sensor for higher efficiency under the low humidity condition while D company uses only temperature sensor.

Multi V S

Dual Sensing : Temperature(DB) + Humidity(WB)

D Company

Single Sensing: Temperature(DB) only



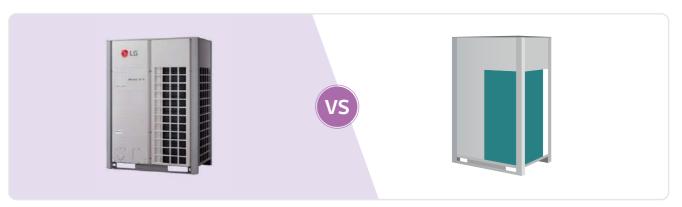
COMPARISON WITH COMPETITORS



PRODUCT COMPARISON I AIR COOLED VRF

MULTI V 5

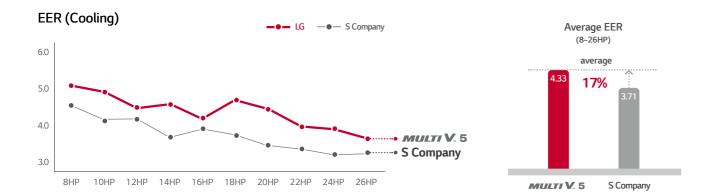






EER Comparison

MULTI V 5 EER (8~26HP) is higher than S Company. (8~26HP average EER is 17% higher than S Company)



EER Comparison - EUROVENT

HP	8	10	12	14	16	18	20	22	24	26	avg.
MULTI V. 5	4.99	4.83	4.43	4.52	4.11	4.62	4.39	3.92	3.86	3.60	4.33
S Company	4.48	4.09	4.12	3.66	3.87	3.70	3.45	3.32	3.20	3.24	3.71

 ${}^*S\,Company\,: Standard\,model, AMxxxJXVAGH, AMxxxKXVAGH, Ducted$ * MULTI V 5 : ARUMxxxLTE5, Ducted

COP Comparison

MULTI V 5 average COP (8~26HP) is higher than S Company. (8~26HP average EER is 12% higher than S Company)



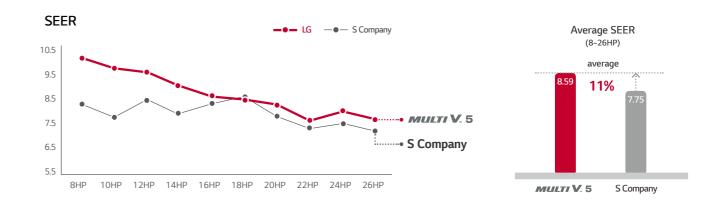
COP Comparison - EUROVENT

HP	8	10	12	14	16	18	20	22	24	26	avg.
<i>MULTI</i> V . 5	5.64	5.69	4.91	4.82	4.36	4.98	4.59	4.35	4.23	4.23	5.27
S Company	4.94	4.74	4.71	4.43	4.46	4.68	4.60	4.50	4.51	4.41	4.71

*S Company: Standard model, AMxxxJXVAGH, AMxxxKXVAGH, Ducted * MULTI V 5 : ARUMxxxLTE5, Ducted **COMPARISON WITH COMPETITORS**

SEER Comparison

MULTI V 5 SEER is mostly higher than S Company. (8~26HP average SEER is 11% higher than S Company)



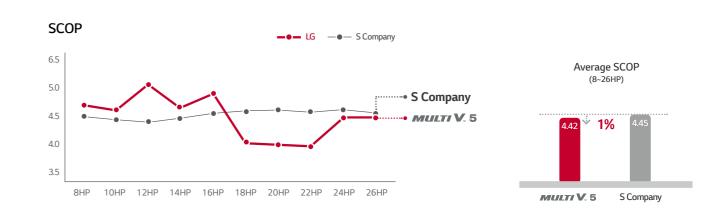
SEER Comparison - EUROVENT

HP	8	10	12	14	16	18	20	22	24	26	avg.
<i>MULTI</i> V . 5	10.10	9.70	9.59	8.89	8.38	8.23	8.05	7.51	7.88	7.55	8.59
S Company	8.15	7.70	8.23	7.97	8.20	8.29	7.50	7.10	7.30	7.10	7.75

* S Company : Standard model, AMxxxJXVAGH, AMxxxKXVAGH, Ducted * MULTI V 5 : ARUMxxxLTE5, Ducted

SCOP Comparison

MULTI V 5 average SCOP is slightly lower than S Company. (8~26HP average SCOP is 1% lower than S Company)



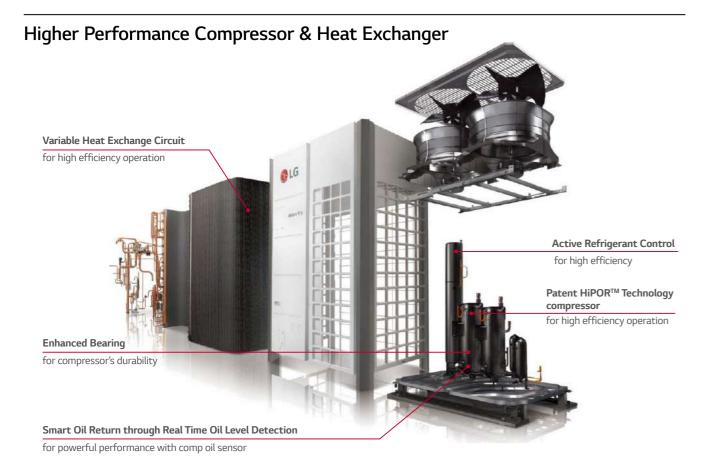
SCOP Comparison - EUROVENT

НР	8	10	12	14	16	18	20	22	24	26	avg.
<i>MULTI</i> V . 5	4.69	4.51	5.01	4.63	4.83	4.00	3.98	3.90	4.34	4.34	4.42
S Company	4.45	4.34	4.31	4.40	4.51	4.54	4.56	4.46	4.50	4.40	4.45

 ${}^{\star}\text{S Company : Standard model, AMxxxJXVAGH, AMxxxKXVAGH, Ducted}$ * MULTI V 5 : ARUMxxxLTE5, Ducted







HiPOR™

With patent HiPOR™ technology, compressor can operate without energy loss which is occurred by oil return process.

Multi V 5

No loss in suction gas

% HiPOR™: High Pressure Oil Return

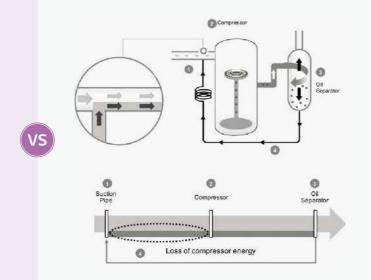
Refrigerant

Compressor



S Company

- Volume loss
- By-pass loss of high pressure refrigerant



EW PRODUCT INTRODUCTION KEY FEATURES COMPARISON WITH COMPETITORS

Smart Oil Return Through Real-Time Oil Level Detection

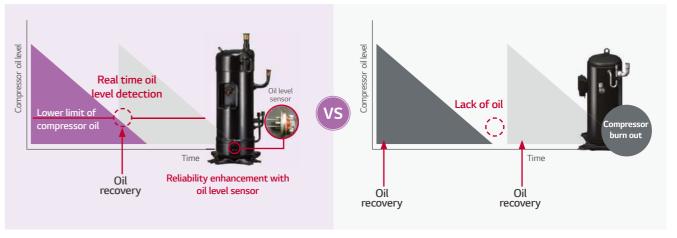
MULTI V 5 applied Smart Oil Return technology, the real-time oil level detection improved compressor reliability.

Multi V 5

- Oil recovery operation carried out only during oil shortage
- \bullet Fundamentally prevent risk of compressor burnt out

S Company

- No warning during lack of oil state
- Compressor burnt problem due to lack of oil status before oil recovery operation period



Smart Oil Return Through Real-Time Oil Level Detection

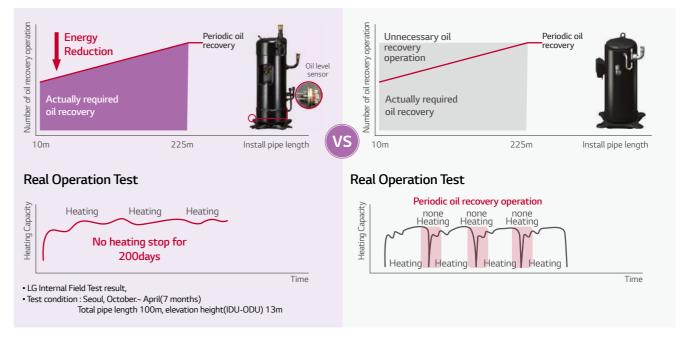
VRF system is required oil recover for reliability. MULTI V 5 recover oil when oil level sensor detects low oil level. It can reduce energy consumption and minimize heating operation stop time.

Multi V 5

- Apply oil level sensor Reliability up
- Required oil recovery operation Efficiency increase
- Oil distribution technology between compressors

S Company

- Periodic oil recovery is performed to secure reliability
- Stop heating operation and energy consumption are reduced due to oil recovery operation



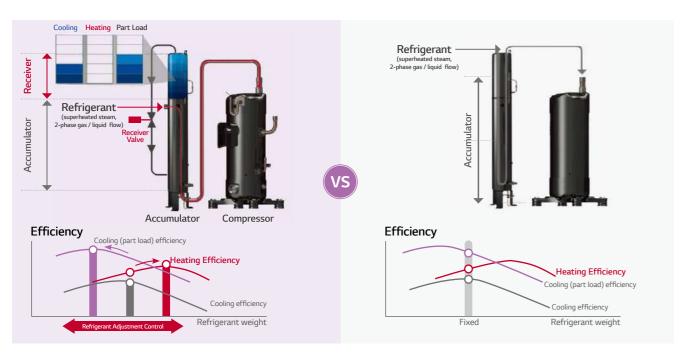




Active Refrigerant Control

Real time optimal refrigerant control according to change in load maximizes system efficiency.

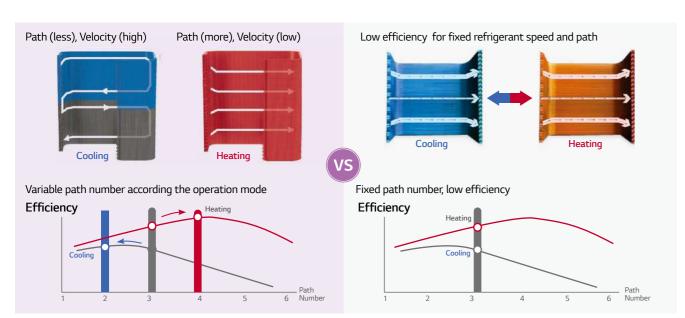
Multi V 5 S Company



Variable Heat Exchanger Circuit

The optimization of heat exchanger's path number has improved in heating and cooling efficiency.

Multi V 5 S Company



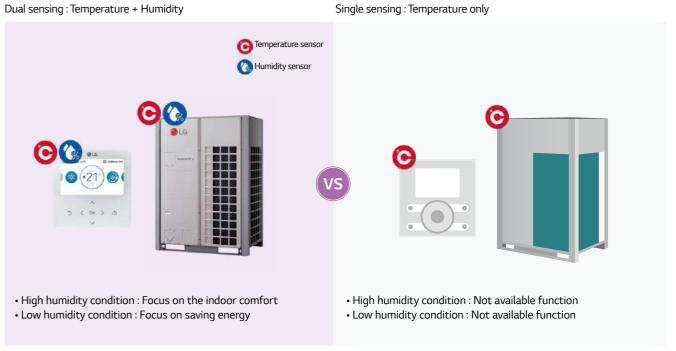
Dual Sensing Control

MULTI V 5 can save more energy with dual sensing (temp & humidity sensor) control under low humidity condition. Also, can make more comfortable indoor environment through dual sensing.

Multi V 5

S Company

Single sensing: Temperature only



Light Weight Outdoor Units

Multi V 5 overall maximum weight is less than 310kg.





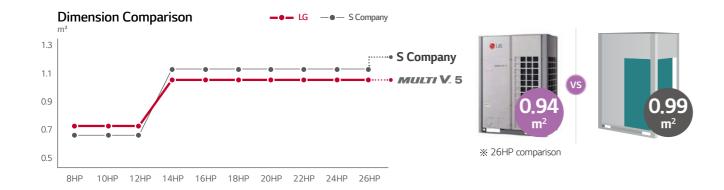
											o i ii c i ii g
	HP	8	10	12	14	16	18	20	22	24	26
Weight Comparison	<i>MULTI</i> V . 5	198	215	215	237	237	300	300	300	310	310
Comparison	S Company	186	197	210	226	253	255	282	290	342	350

* Reference: MULTI V 5 heat pump 380V vs. S Company heat pump AMXXXJXVAGH



Small Footprint Outdoor units

MULTI V 5 8HP~ 12HP installation area is 0.71m², 14HP ~ 26HP installation area is 0.94 m²,

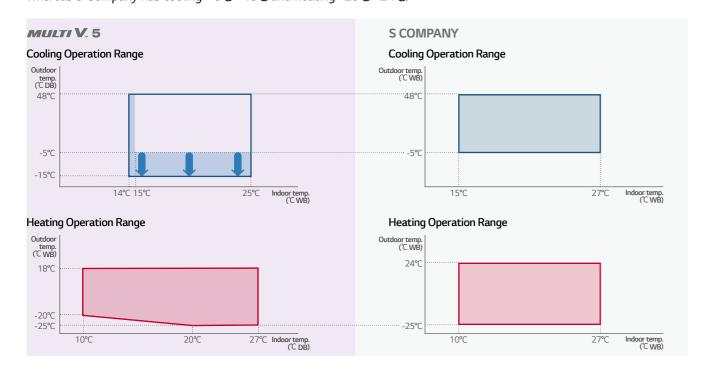


	НР	8	10	12	14	16	18	20	22	24	26
Footprint Comparison	<i>MULTI</i> V . 5	0.71	0.71	0.71	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Comparison	S Company	0.67	0.67	0.67	0.99	0.99	0.99	0.99	0.99	0.99	0.99

^{*} Reference : MULTI V 5 heat pump 380V vs. S Company heat pump MMY-

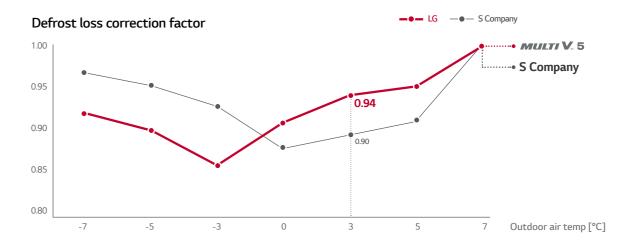
Wide Operation Range

MULTI V 5 has Wide Operation Range with cooling -15 $^{\circ}$ C 48 $^{\circ}$ C and heating -25 $^{\circ}$ C 18 $^{\circ}$ C. whereas S Company has cooling -5 $^{\circ}$ C 48 $^{\circ}$ C and heating -25 $^{\circ}$ C 24 $^{\circ}$ C.



Defrost Loss Correction Factor

Multi V 5 defrost loss correction factor is similar with S Company.

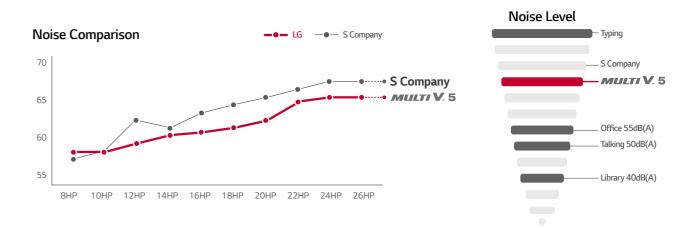


		Max 5% difference								
°C	-7	-5	-3	0	3	5	7	avg.		
<i>мицті</i> V. 5	0.92	0.90	0.86	0.91	0.94	0.95	1.00	0.93		
S Company	0.97	0.96	0.93	0.88	0.90	0.91	1.00	0.93		

^{*} MULTI V 5 condition : Partial defrost operation / Dual sensing * Source : EPDB

Outdoor Unit Noise Level

Noise Level of MULTI V 5 is less than S Company. (avg. 2 dB(A) gap)



	HP	8	10	12	14	16	18	20	22	24	26
Noise Level Comparison	<i>MULTI</i> V . 5	58	58	59	60	60.5	61	62	64.5	65	65
Companison	S Company	57	58	62	61	63	64	65	66	67	67

^{*} Unit : dB(A), single unit comparison, refer to Cat'g

SINGLE SPLIT







COMPETITOR COMPARISON I CEILING CONCEALED DUCT

SINGLE SPLIT

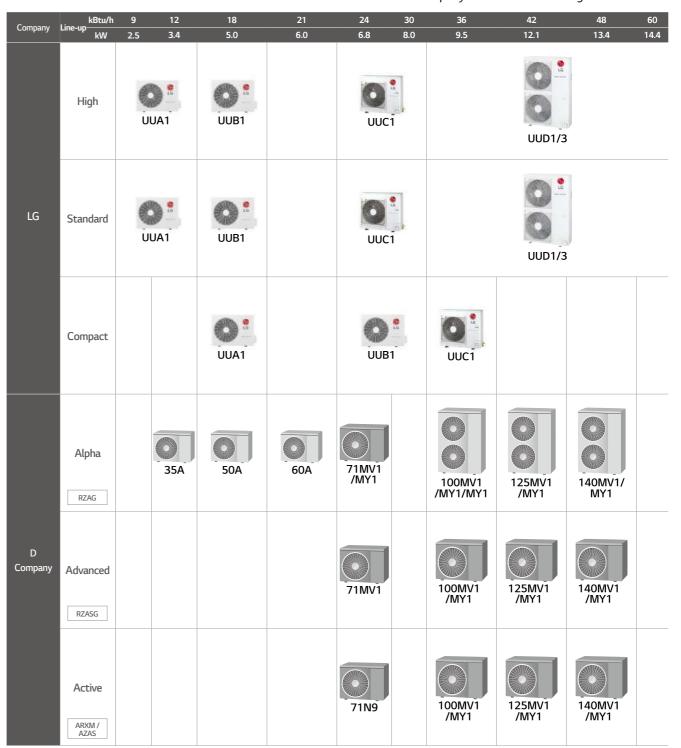
A COMPANY



EW PRODUCT INTRODUCTION KEY FEATURES COMPARISON WITH COMPETITORS

Expanded Line-up Coverage with Minimum SKU*

The Number of ODU has been reduced to 5 and it covers 9 ~ 60kBtu/h. D company has 25 ODU covering 12 ~ 48kBtu/h.



*SKU : Stock Keeping Unit

SINGLE SPLIT



Key Spec. Comparison

Overall key specifications are competitive with that of D company's products. Especially, LG compact models have comparable spec. with D company's standard models.

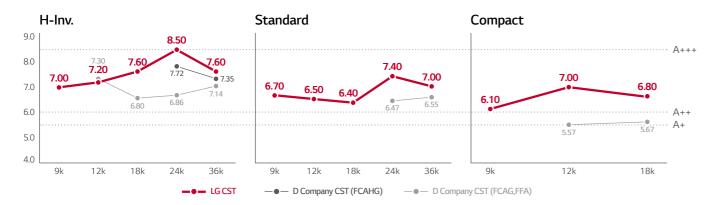
* Models : 36k Cassette

	_		High			Standard			Compact	
Comparison Items		LG	D company		LG	D company		LG	D company	
SEER (Grade)		7.60 (A++)	7.35 (A++)	•	7.00 (A++)	6.55 (A+)	•	6.60 (A++)	5.67 (A+)	•
SCOP (Grade)		4.50 (A+)	4.81 (A+)	•	4.30 (A+)	4.17 (A+)	•	4.10 (A+)	3.85 (A)	•
Operation Range (Cooling / Heating)	°C DB	-20 ~ 52 -25 ~ 18	-20 ~ 52 -20 ~ 18	•	-20 ~ 52 -25 ~ 18	-15 ~ 46 -15 ~ 15.5	•	-15 ~ 48 -15 ~ 18	-5 ~ 46 -15 ~ 15.5	•
Max. Pipe Length	m	85	85	-	85	50	•	50	30	•
Sound Power Lv. ODU	dB(A)	66	66	-	66	70	•	70	70	=
Sound Power Lv. IDU	dB(A)	59	61	•	61 ¹⁾	54	•	61 ¹⁾	54	•
Foot Print (ODU)	m^2	0.31	0.30	=	0.31	0.30	=	0.31	0.30	=
Product Weight (ODU)	kg	87.5	92	•	87.5	70	•	57.7	70	•
IDU Air Flow(Low / High)	CMM	23.0 / 28.0	19.0 / 32.3	•	22.5 / 27.5	12.4 / 22.8	•	22.5 / 27.5	12.4 / 22.8	•

1) Low Noise Mode (Installer Option)

SEER

Seasonal Efficiency of LG product are mostly higher than D Company. Highest Efficiency (SEER up to 8.50, A+++) in the market.



Casset	tte (840x840))	12k	18k	24k	36k	42k	48k
		LG		7.60	8.50	7.60	7.40	6.80
	High	D(SH)			7.72	7.35	8.02	7.93
		D	7.30	6.80	6.86	7.14	7.80	7.17
SEER		LG			7.40	7.00	7.00	6.50
	Standard	D			6.47	6.55	5.76	6.53
	Compact -	LG			7.00	6.80		
		D			5.57	5.67	5.40	6.00

Mini Cas	sette (570x5	70)	9k	12k	18k
	High	LG	7.00	7.20	
CEED	High	D		6.40	6.30
SEER	Standard	LG	6.70	6.50	6.40
	Compact	LG			6.10

W PRODUCT INTRODUCTION KEY FEATURES COMPARISON WITH COMPETITORS

SEER

Seasonal Efficiency of LG product are mostly higher than D Company. All models have the energy efficiency class of A + or higher.



Duct (Mi	d Static Press	ure)	12k	18k	24k	36k	42k	48k
	High	LG	6.10	6.60	6.90	6.40	6.20	6.10
	nigii	D	6.12	6.30	6.22	6.47	6.19	6.42
SEER	Chandard	LG		6.40	6.50	5.80		
SEER	Standard	D			6.19	5.83	5.49	5.81
	Comment	LG		5.60	5.80	5.80		
	Compact	D			5.57	5.25	4.85	5.50

Duct (Lov	w Static Press	ure)	9k	12k	18k	24k
	High	LG		6.10	6.50	
CEED		D		5.90	5.90	
SEER	Standard	LG	5.60	5.60	6.10	6.20
	Compact	LG			5.80	6.00

SCOP

Seasonal Efficiency of LG product are mostly higher than D Company. Compact models are also compatible with D company's standard models.



Casset	tte (840x840))	12k	18k	24k	36k	42k	48k
		LG		4.40	4.80	4.50	4.50	4.50
	High	D(SH)			4.61	4.81	4.53	4.44
		D	4.30	4.30	4.41	4.61	4.34	4.34
SCOP	Chandand	LG			4.40	4.30	4.30	4.20
	Standard	D			4.17	4.05	4.31	4.17
	Compact	LG			4.30	4.30		
	Compact	D			3.81	3.85	3.80	4.31

IVIII II Cas	sette (370x3	, 0,	J.K.	121	TOK
	Uich	LG	4.30	4.30	
SCOP	High	D		3.80	4.01
SCUP	Standard	LG	4.30	4.40	4.30
	Compact	LG			4.00

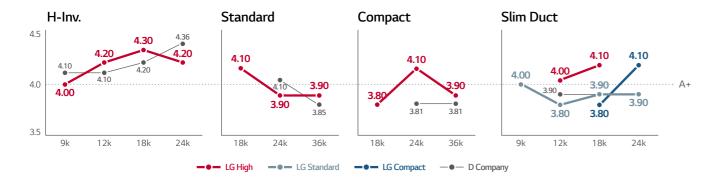
COMPARISON WITH COMPETITORS

SINGLE SPLIT



SCOP

Heating Seasonal Efficiency of LG product are mostly higher than D Company. Compact models are also compatible with D company's standard models.



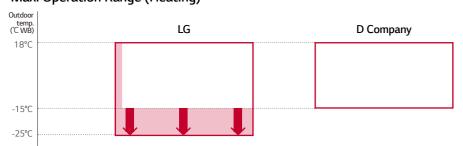
Duct (Mi	d Static Press	sure)	12k	18k	24k	36k	42k	48k
	High	LG	4.00	4.20	4.30	4.20	4.10	4.10
	High 	D	4.10	4.10	4.20	4.36	4.12	4.11
CCOD	Chandand	LG		4.10	3.90	3.90	3.90	4.00
SCOP	Standard	D			4.01	3.85	3.63	3.85
	C	LG		3.80	4.10	3.90		
	Compact	D			3.81	3.81	3.55	3.85

Duct (Low Static Pressure)			9k	12k	18k	24k
ccop	High	LG		4.00	4.10	
		D		3.90	3.90	
SCOP	Standard	LG	4.00	3.80	3.90	3.90
	Compact	LG			3.90	4.10

Wide Operation Range

Wide operation range ensures stable performance against extreme outdoor conditions.

Max. Operation Range (Heating)



Heating Operation Range (°C WB)

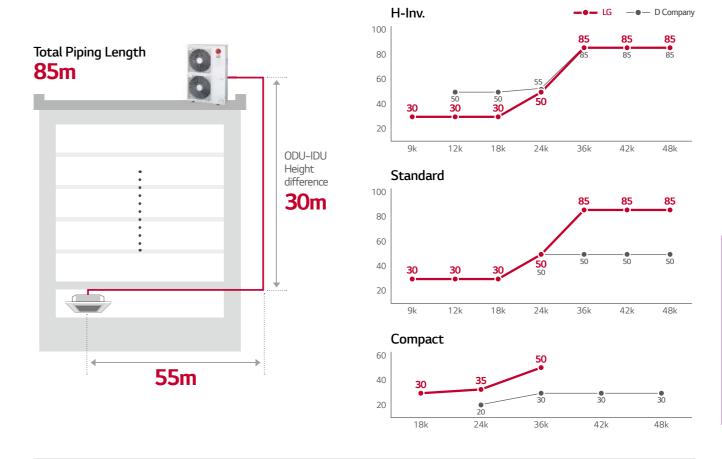
Ca	apacity(kW)	9k	12k	18k	24k	30k	36k	42k	48k
	High			-20 ~ 18				-25 ~ 18	
LG	Standard			-20 ~ 18				-25 ~ 18	
	Compact		-	-10 ~ 18		-15 ~ 18		-	-
	Alpha	-				-20 ~ 18			
D	Advanced		-			-	15 ~ 15.	5	
	Active		-		-15 ~ 18		-15 ~	- 15.5	

Cooling Operation Range (°C DB)

				-					
Ca	pacity(kW)	9k	12k	18k	24k	30k	36k	42k	48k
	High		-15 ~ 50		-20 -	- 50		-20 ~ 52	
LG	Standard		-15 ~ 50		-20	- 50		-20 ~ 52	
	Compact		-	-10 ~ 50	-10	- 48	-20 ~ 50	-	
	Alpha	-	-20 ~ 52						
D	Advanced		15 ~ 46						
	Active		-		-10 ~ 46 -5 ~ 46				

Flexible Installation

LG Standard models as well as H-Inverter can be installed in 85m long distance between indoor and outdoor unit, and 30 m elevation between indoor units. Design flexibility is enhanced.



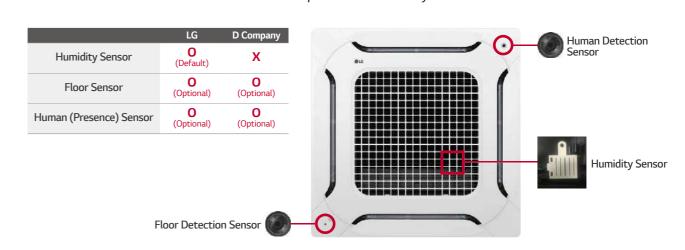
Intelligent Sensors

LG improves energy efficiency and comfort using 3 intelligent sensors.

- Humidity Sensor, Human Detection Sensor, Floor Detection Sensor.

D company applies Presence and Floor Sensor.

It makes the comfortable condition faster with temperature and humidity sensor.



MULTI SPLIT





COMPETITOR COMPARISON I CEILING CONCEALED DUCT

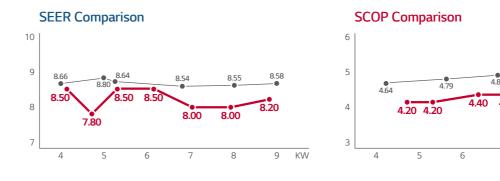
MULTI SPLIT A COMPANY



W PRODUCT INTRODUCTION KEY FEATURES COMPARISON WITH COMPETITORS

Comparison of SEER / SCOP (rated)

MULTI Split has worse efficiency than D company's products at the rated cooling / heating conditions.

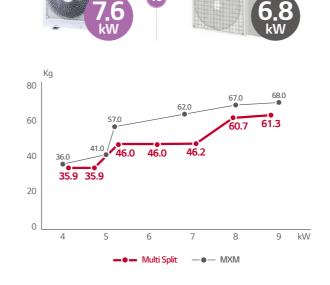


Cooling Test Condition						
Company	LG	D				
Indoor (DB/WB)	27℃/19℃	27 °C / 19 °C				
Outdoor (DB/WB)	35 ℃ / 24 ℃	35 ℃ / 24 ℃				
Level difference	0 m	0 m				

Heating Test Condition						
Company	LG	D				
Indoor (DB/WB)	20℃/15℃	20℃/15℃				
Outdoor (DB/WB)	7℃/6℃	7℃/6℃				
Level difference	0 m	0 m				

Comparison of weights

MULTI Split is lighter than D company's products in the all capacity range It makes installation and maintenance easy, so customers can save costs.





10 KW

MULTI SPLIT

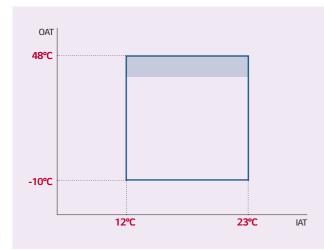


Comparison of cooling operation ranges

MULTI Split has a wider cooling operation range than D company's.

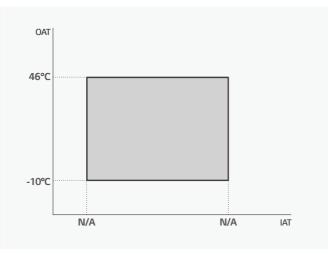
MULTI SPLIT

Outdoor temperature range for cooing operation is -10 ~ 48°C



MXM (D company)

Outdoor temperature range for cooing operation is -10 ~ 46°C



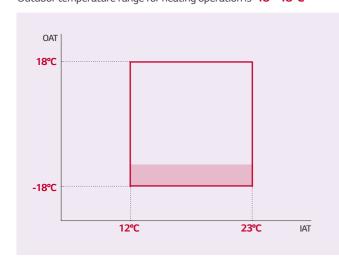
* OAT : Outdoor Air Temperature * IAT : Indoor Air Temperature

Comparison of heating operation ranges

MULTI Split has a wider heating operation range than D company's.

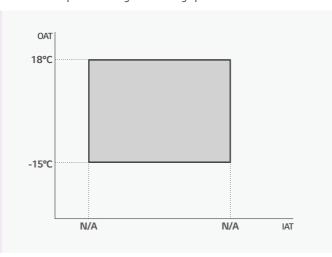
MULTI SPLIT

Outdoor temperature range for heating operation is -18 ~ 18°C



MXM (D company)

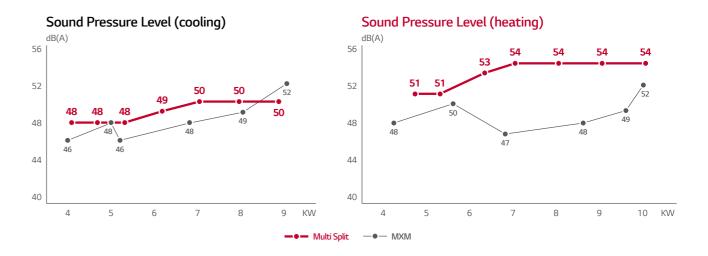
Outdoor temperature range for heating operation is -15 ~ 18°C



 $\hbox{* OAT :} \hbox{Outdoor Air Temperature}$ * IAT : Indoor Air Temperature **COMPARISON WITH COMPETITORS**

Comparison of sound pressure levels

MULTI Split has worse sound levels than those of D company's



Comparison of pipework limits

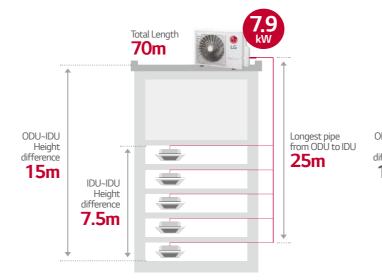
MULTI Split has similar flexibility for pipework with D company's.

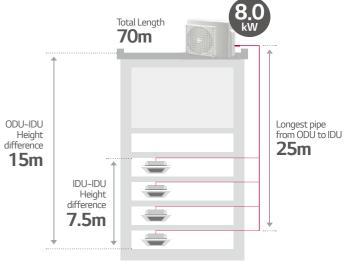
MULTI SPLIT

kW	Total Length (Max, m)	Longest Length (Max, m)	Elevation (ODU-IDU, m)	Elevation (IDU-IDU, m)
4.1	30	20	15	7.5
4.7	30	20	15	7.5
5.3	50	25	15	7.5
6.2	50	25	15	7.5
7.0	70	25	15	7.5
7.9	70	25	15	7.5
8.8	75	25	15	7.5

MXM (D company)

НР	Total Length (Max, m)	Longest Length (Max, m)	Elevation (ODU-IDU, m)	Elevation (IDU-IDU, m)
4.0	30	20	15	7.5
5.0	30	20	15	7.5
4.0	50	25	15	7.5
5.2	50	25	15	7.5
6.8	50	25	15	7.5
6.8	60	25	15	7.5
8.0	70	25	15	7.5
9.0	75	25	15	7.5





MULTI SPLIT



Comparison of sizes

D company has a similar footprint as that of MULTI Split.

MULTI SPLIT

Outdoor temperature range for cooing operation is -10 ~ 48°C

MXM (D company)

Outdoor temperature range for cooing operation is -10 ~ 46°C



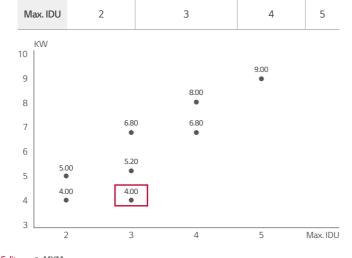
Comparison of maximum IDUs

D company has one more ODU model which can be connected with 3 IDU units.

MULTI SPLIT



MXM (D company)



4.0 5.0 6.8

Multi Split • N

KEY FEATURES

COMPARISON WITH COMPETITORS



BRAND BUSINESS PRODUCTS ENGINEERING ONLINE LG
TOOL HVAC GUIDE



ENGINEERING TOOL

ENGINEERING TOOL

INTRO	260
LATS	272
CFD	292
FNG. MODELING	298

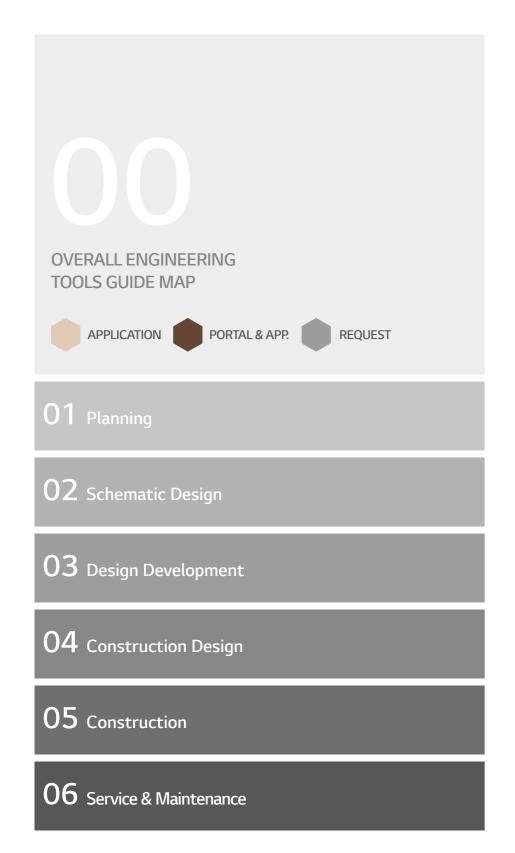
INTRO

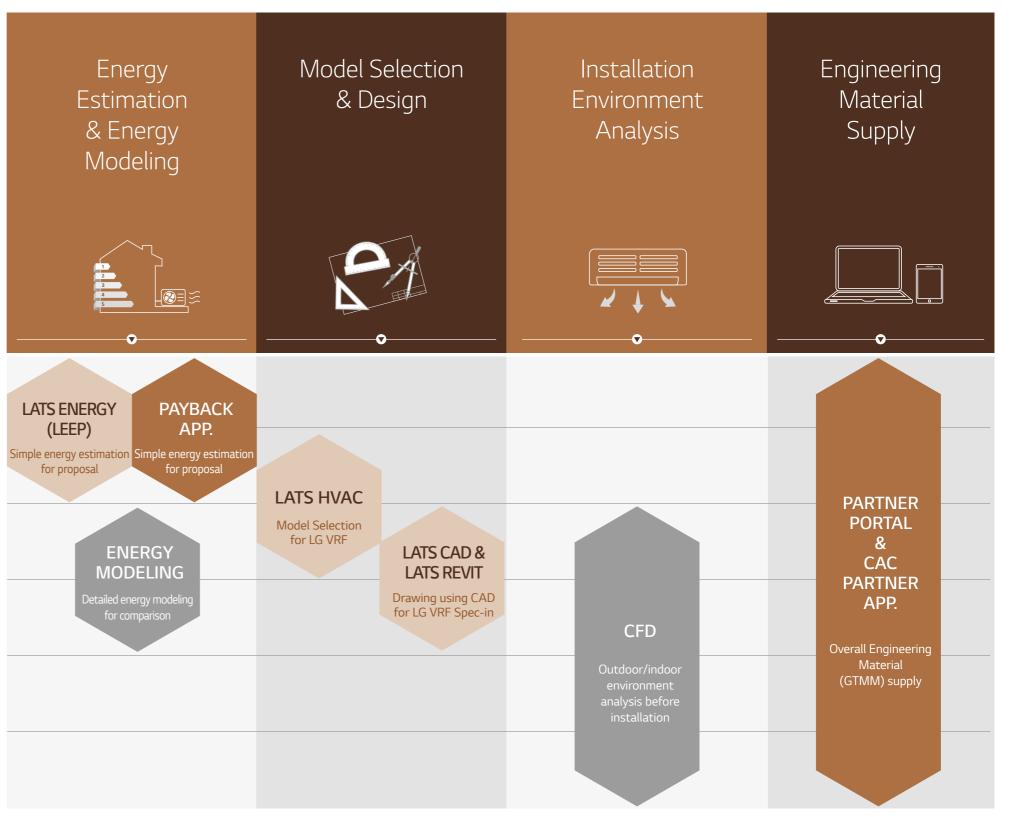
OVERALL ENGINEERING TOOLS GUIDE MAP



Overall Engineering Tools Guide map

LG offers engineering tools and solutions focused on HVAC, during the overall lifecycle of a building.



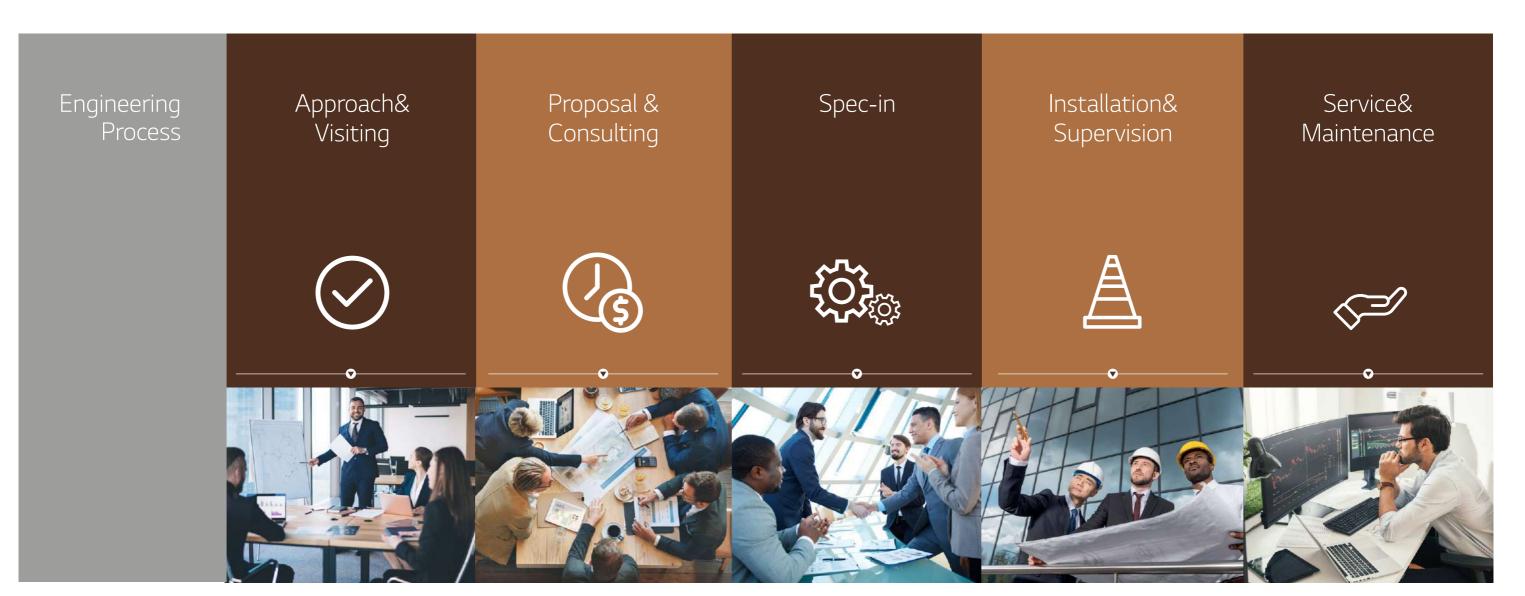


ENGINEERING TOOL

INTRO

ENGINEERING PROCESS





Approach & Visiting

Architects and consultants are the first to be appointed by building owners in the initial stage of design process. The key accounts management is very important for the success of the project.

Proposal & Consulting

Service and maintenance is essential for the proper operation during the product life cycle, which results in saving of time and money.

Spec-in

The project is qualified for the suitable air-conditioning system which is selected with the best product and solution through engineering service.

Installation & Supervision

The best products and solutions are presented with respect to building type, which creates more benefits for the customers.

Service & Maintenance

Securing quality of installation through supervision ensures continuous business there by enhancing for the customers.

ENGINEERING CAPABILITY



HVAC Tool & Support

INTRO



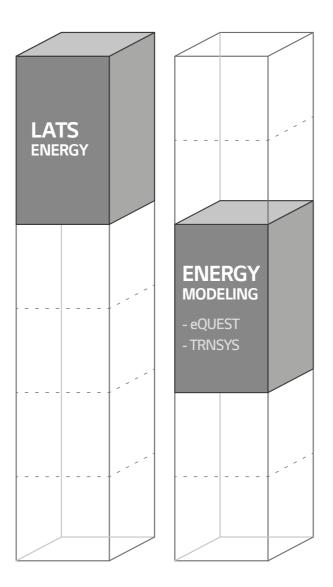
- 01 Planning
- 02 Schematic Design
- 03 Design Development
- 04 Construction Design
- 05 Construction
- 06 Service & Maintenance







Energy Estimation & Energy Modeling









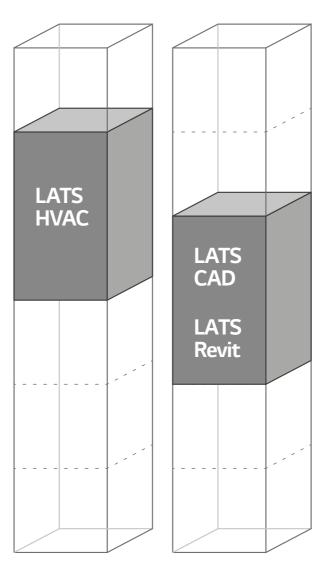




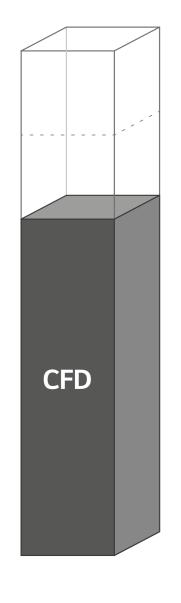
03 CF



Model Selection & Design



Installation Environment Simulation



ENGINEERING CAPABILITY





Energy Estimation Tool

LATS CAD enables faster and a more accurate design of LG HVAC products. Moreover, it offers not only designing, but also quotation and installation review in order to minimize problems during installation processes.



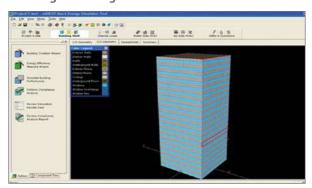
NTRO LATS CFD ENG. MODELING

>eQUEST >TRNSYS

Energy Modeling Tool

These are certified commercial programs which assess the HVAC system efficiency and building's annual energy saving for building standard or certification like LEED.

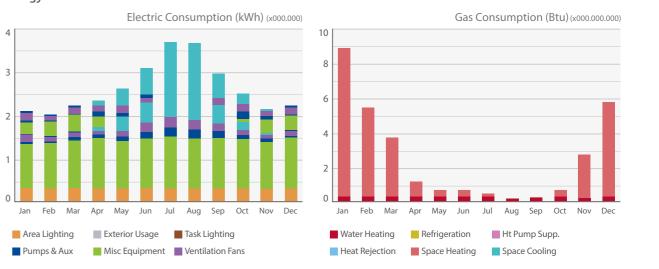
Building Modeling



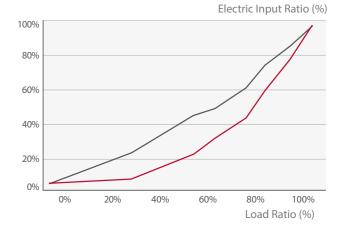
HVAC System Modeling



Energy Simulation Results



Part Load Efficiency



INTRO

ENGINEERING TOOL

INTRO

ENGINEERING CAPABILITY





Model Selection & Design

LATS CAD enables faster and a more accurate design of LG HVAC products. Moreover, it offers not only designing, but also quotation and installation review in order to minimize problems during installation processes.





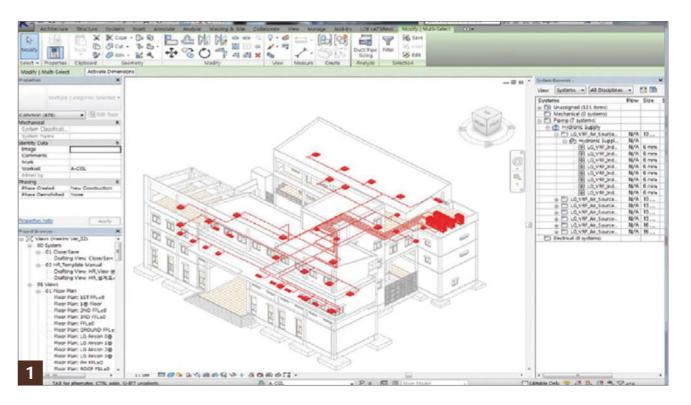
- 1. Drawing check (Installation review)
- 2. VRF system drawing
- 3. System diagram
- * LATS CAD is LG's designing program, aligned with AutoCAD.

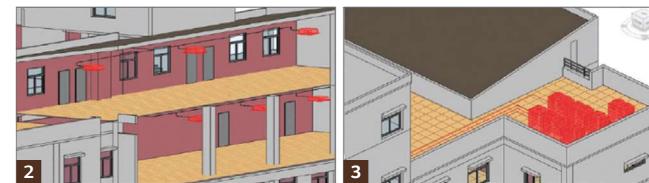
NTRO LATS CFD ENG. MODELING



Model Selection & Design

LATS REVIT is developed to make 3D designing of LG HVAC products easier than the conventional program. It enables engineers to check 3D images from designing stage and prevents possible issues of the installation stage.





- 1. LATS REVIT running screen
- 2. Indoor unit 3D floor plan
- 3. Outdoor unit 3D floor plan
- * LATS REVIT is LG's 3D HVAC designing program, aligned with REVIT $^{\!\scriptscriptstyle{\mathsf{TM}}}$

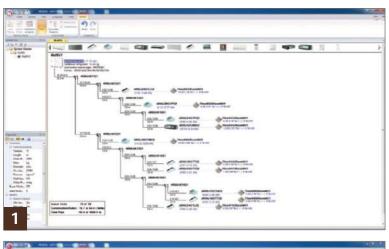
ENGINEERING CAPABILITY

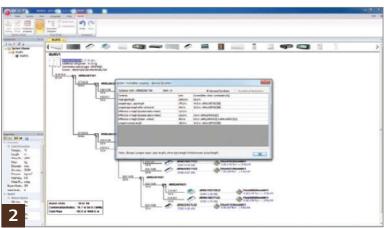




Model Selection & Design

LATS HVAC is an integrated model selection program of LG HVAC products, enabling an accurate and quick selection on the best model suitable to each site. In addition to model selection, faster estimation on refrigerant piping diameter and additional refrigerant is possible, along with auto printing of reports.



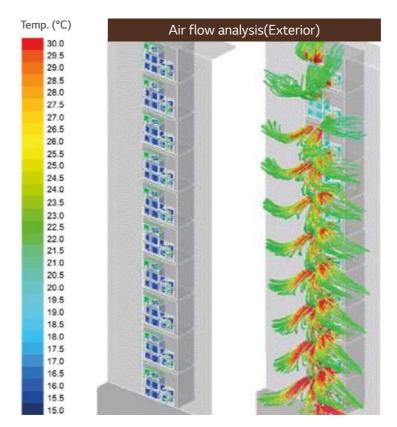


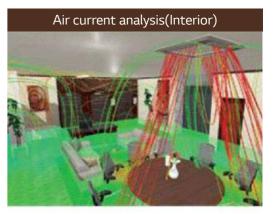
		Mo	del Selec	ction	- Analys	is		tert
ojest Name i stem No. 1/1		150326					03/	25/2019
Ovideer Med	elName		Quartit		Q Na	Price	Total	Price
- 110000	3001754	$\overline{}$	1	_				
	Target .		- 1				3	
ndoer Units	el Name	_						
	1897702		Queren	4	UNE	Price	Total	42000
_	349TTC2	\rightarrow						
ARNU	1567002		1				-)
ARNO	349TPC2		10				0	
ARNU	2897902		1					
ARNU	48GTMC2		1					
ARNU	42G8RA2		1					
	34GTLA2		1			- 3	- 0	
	246762	_	1				-	
	n est		10					3
Pip ex				-	anol/Head	erCamma		
DelicBerrol	(amproint)	UNBFIRE	-	-	deltiers	Quartity	Unit Free	Total Pro-
6.25		_	0	-	BUN01621	4	_	0
952	43	-	0		UN03321	4		0
12.7	29		0		BUN07121 BCNN21	1	-	0
19.05	26		0	F	ACGUST.	,		
22.2	8		0	-				
18.58	20		0	\vdash				
34.9	20		0					
Total	184		0		٥	15		0
Accessories								
ModelName.			Quartit	y	Unit	Price	Tesal	Price
PT-MUC (Q-U)			2			-		2
PT-UMC1 (QU)			2					
	PT-UQC(DU)		1				- 0	

- 1. Automated pipe selection, additional refrigerant calculation
- 2. System check
- 3. Auto printing of estimation and result reports

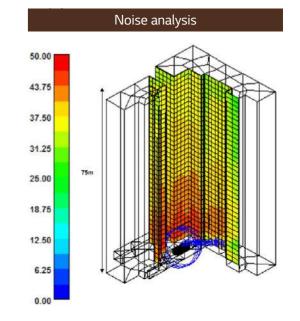
CFD Installation Environment Simulation

CFD Analysis is applied in areas of estimating: indoor airflow and temperature distribution while operating VRF products, outdoor airflow distribution, and noise level.









LATS Single

Key Feature

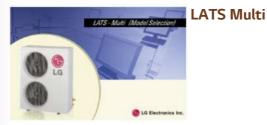
Integrated model selection program

Various kinds of report output

Available all existing functions (LATS Multi V, Multi, Single, ERV)













^{*} AHU / Chiller / GHP is available in some countries. (Contact your LG office)

Key Features of LATS HVAC

LATS HVAC program helps to make a work of consultant (easier and faster.)

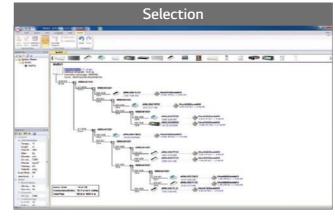
Easy & Quick use

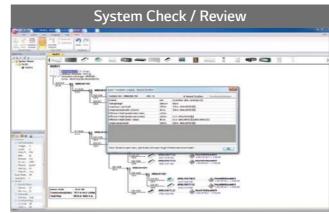
Auto pipe sizing & Branch selection

Auto calculation for additional refrigeration

Check system of design

Auto generating report with simple invoice





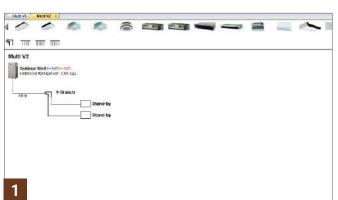


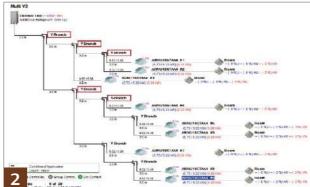
LATS HVAC MODEL SELECTION TOOL

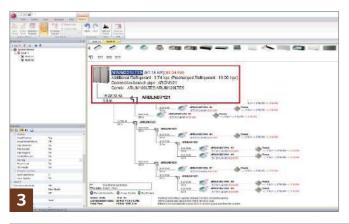


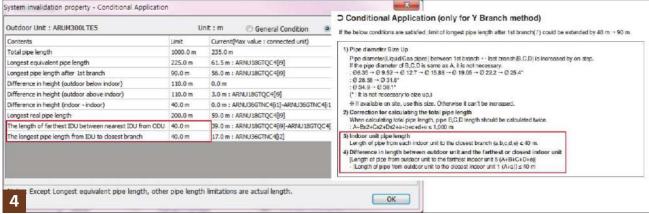
Key Features of LATS HVAC

LATS HVAC program is an integrated model selection program for LG HVAC products.





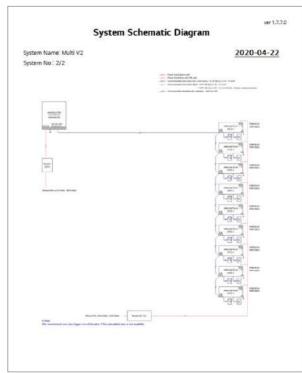




- 1.Easy & Quick Use
- 2.Auto pipe sizing & Branch selection
- 3.Auto calculation for Additional Refrigeration
- 4.Check System of Design

Auto Generating Report



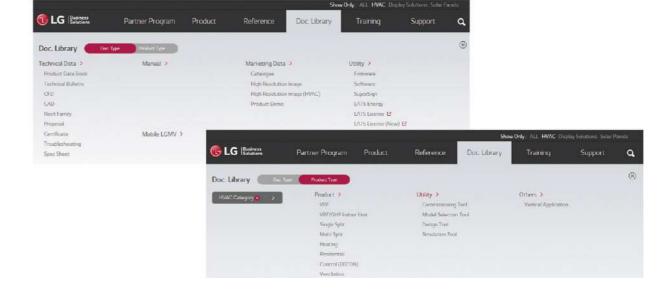


How to Download?

You can download LATS HVAC from the B2B partner portal. In the following location, select the right version of LATS HVAC that meets the specifications of your PC.

http://partner.lge.com/ >

Select Location > Doc. Library > Doc. Type > Utility > Software > Product Type > Model Selection Tool



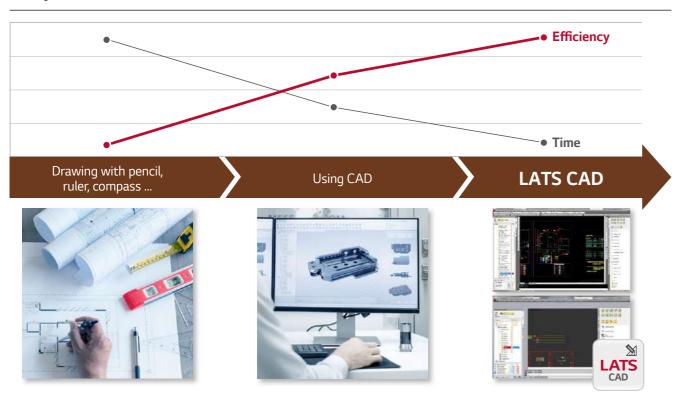
LATS CAD 2D DRAWING TOOL



Introduction of LATS CAD

The purpose of tools is to cut down the working time and to increase the work efficiency efficiency. In the actual case, using LATS CAD cuts down working time by 90% compared to using only AutoCAD.

Purpose of Lats CAD



Work Hour Example

5 Story Building

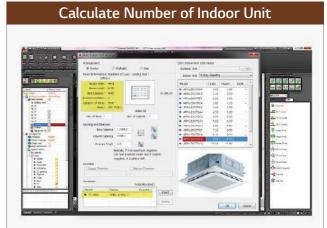
108 Indoor Units, 21 Outdoor Units

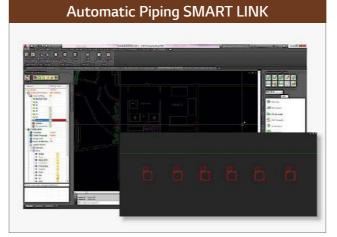
	AutoCAD	LATS CAD
Unit Allocation	3 Hours	0.5 Hours
Pipe Connection	10 Hours	1 Hours
Filling Up Pipe Dimension	3 Hours	Automatic
Equipment Lists	1 Hours	Automatic
Schematic Diagram	3 Hours	0.5 Hours
Total	20 Hours	2 Hours

Key Features of LATS CAD

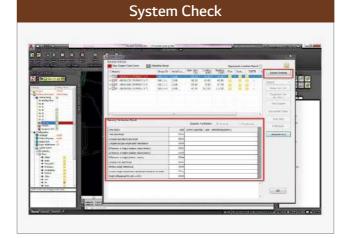
With these functions, users save their working time and get more accurate result.

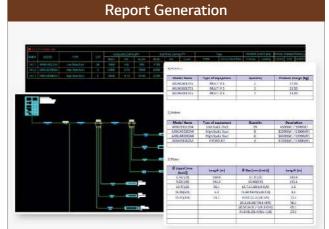








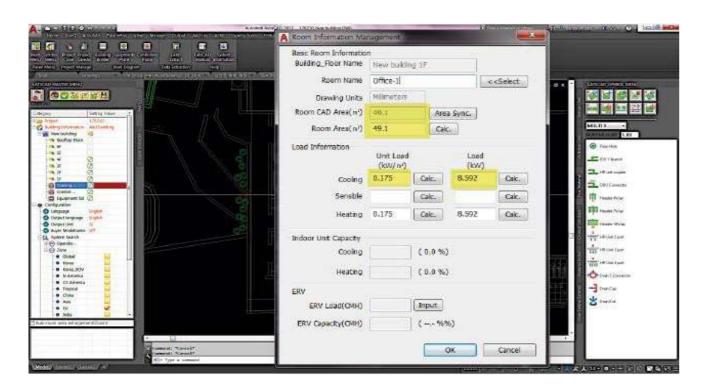




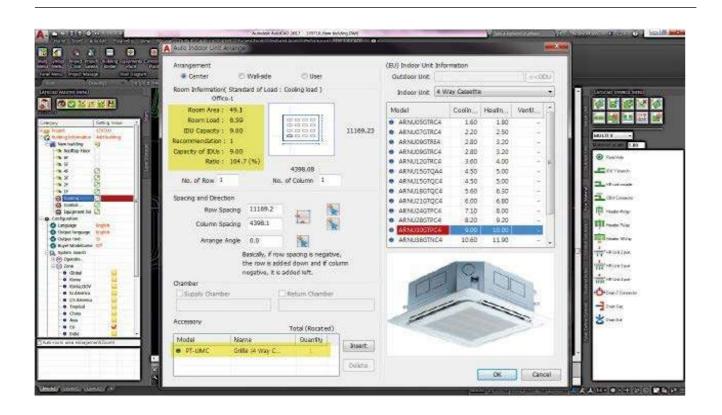
LATS CAD 2D DRAWING TOOL



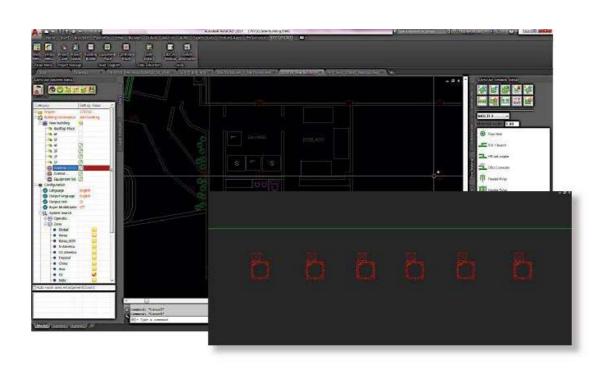
Assign Room Properties



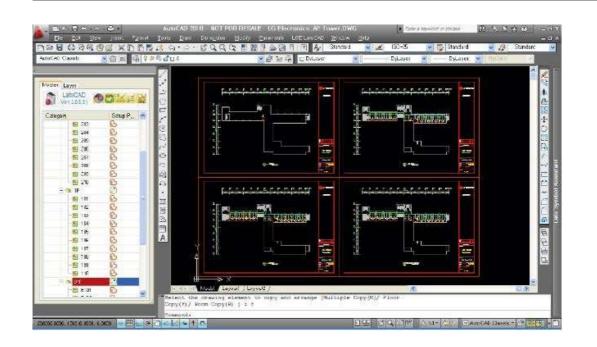
Calculate Number of Indoor Unit



Automatic Piping SMART LINK / Copy Floor to Floors



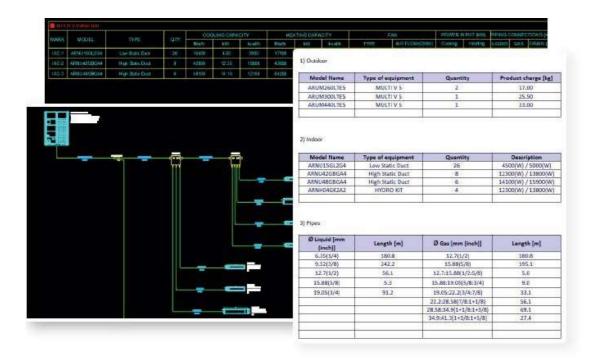
System Check



LATS CAD 2D DRAWING TOOL



Report Generation



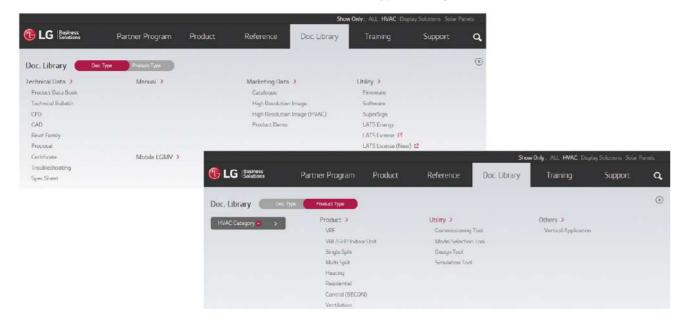
How to Download?

You can download LATS CAD from the B2B partner portal. In the following location, select the right version of LATS CAD that meets the specifications of your PC.

http://partner.lge.com/ >

Select Location > Doc. Library > Doc. Type > Utility > Software

> Product Type > Design Tool



LATS

LATS ENERGY TOOL

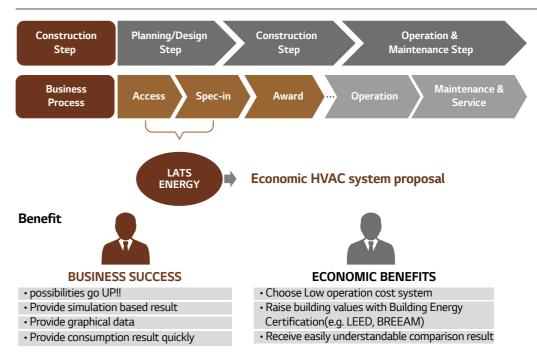
ENG. MODELING

LATS Energy: Simple Energy Calculation Tool

What is LATS Energy?

LATS Energy is a simple energy calculation program, self-developed by LG. This tool calculates energy usage and energy cost of LG VRF systems based on weather profile. It can also compare LG VRF systems with other systems, such as ASHRAE baseline systems, chiller systems, other VRF systems, etc.

Application of Energy Tool in HVAC Business



LATS-Energy (Web based program)



Features

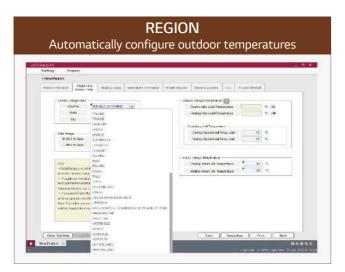
- Global + US PGMs integration > Logic & merit/functions
- · Save / Load project Function
- Web-based PGMS: Access from the B2B partner portal global website > easy update and access
- System comparison: Chiller (water-cooled, air-cooled, absorption), Other Heatpump, ASHRAE Standard system

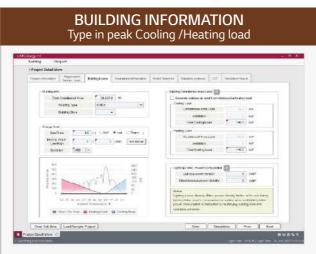
LATS ENERGY TOOL



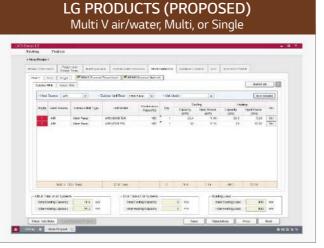
What Kind of Data Is In It?

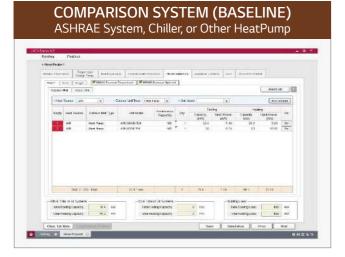
With simple selection and input values, LATS Energy estimates annual energy cost of LG products and other system as well as shows comparison result.

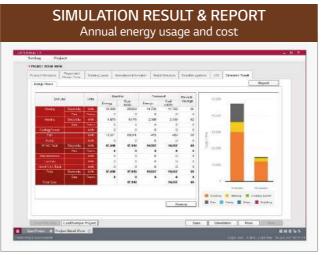




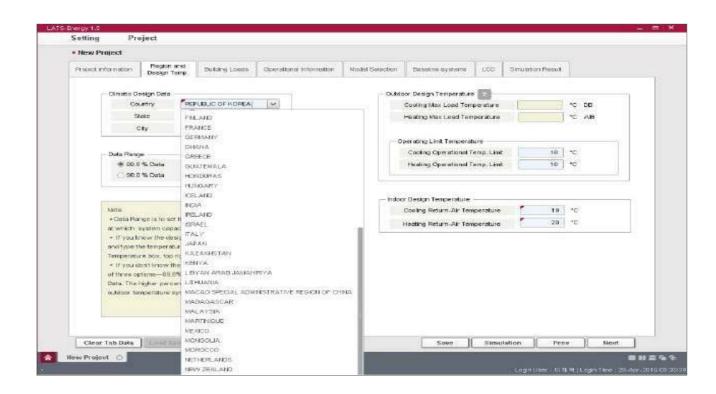




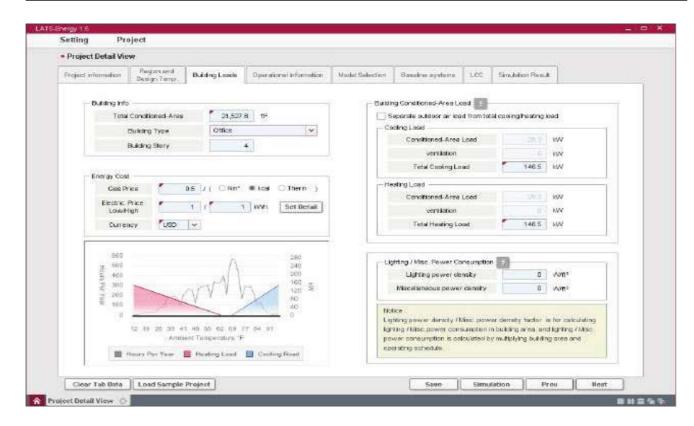




Input - Region & Design Temperature



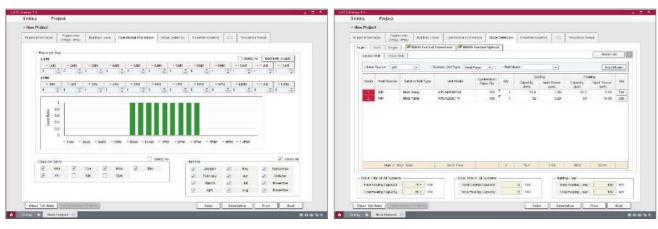
Input - Building Load/Information



LATS ENERGY TOOL



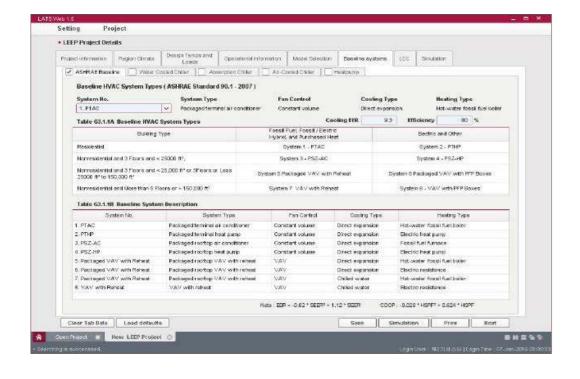
Input - Operating Schedule/Model Selection



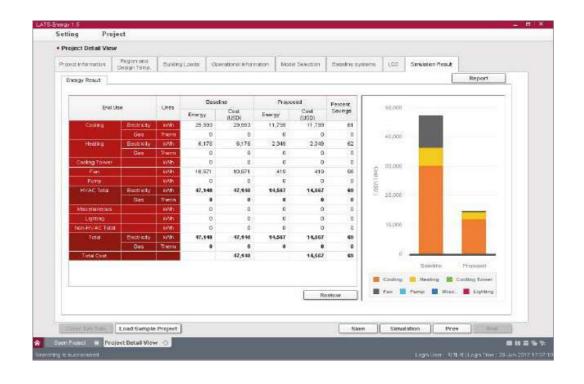
Operating Schedule

Model Selection

Input - Baseline System for Comparison



Simulation Results

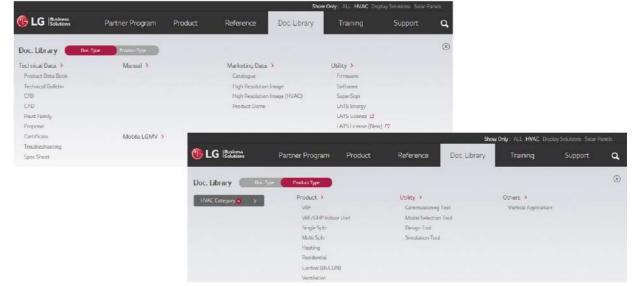


How Can You Use this Programs?

LATS Energy is available for LG Employee and partner members such as applied rep., distributor, etc. Partner members need to request authorization to use. It is a web-based tool, so users need to sign in / log in the B2B partner portal global web site.

http://partner.lge.com/global >

Doc. Library > Doc. Type > Utility > LATS Energy > Product Type > Simulation Tool



^{*}At present LATS Energy is available in only B2B partner portal global web site.

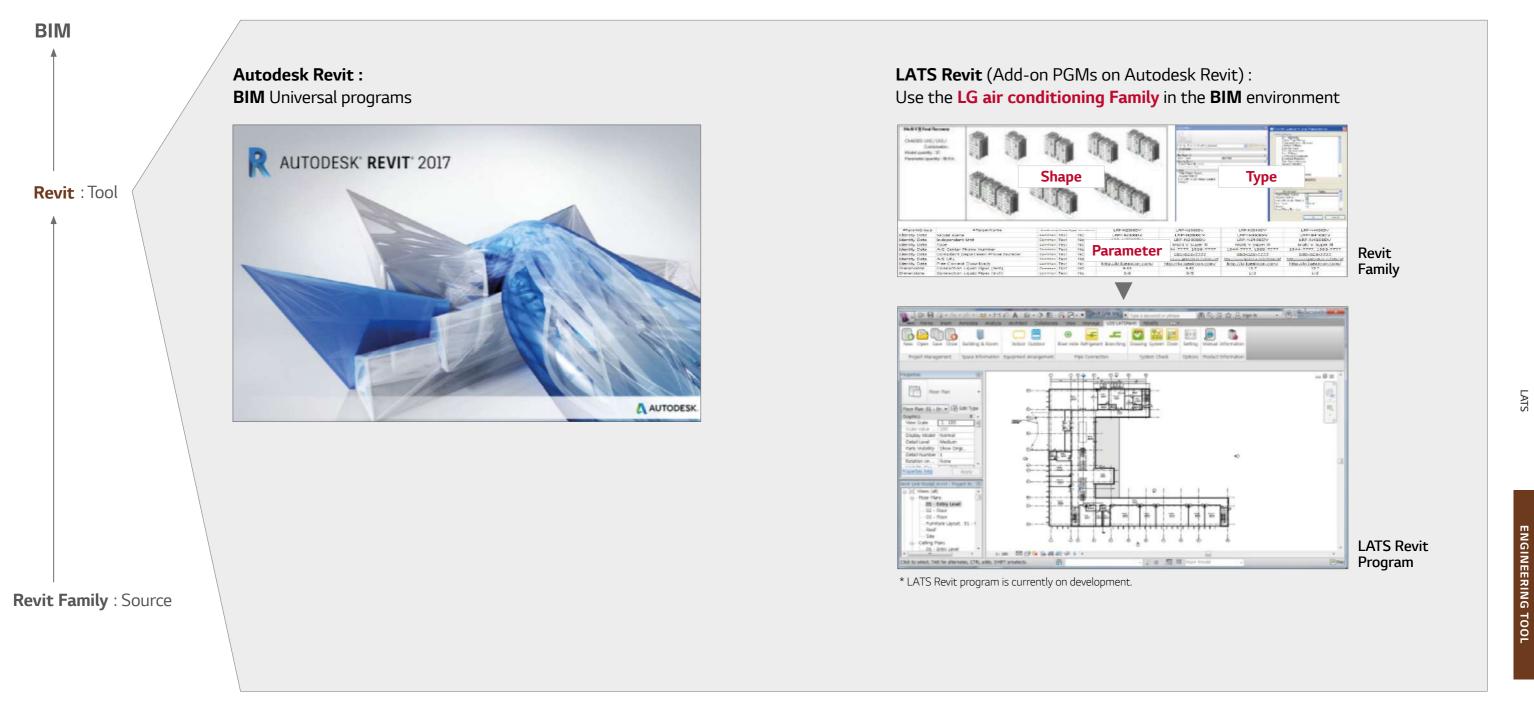
LATS REVIT 3D DRAWING TOOL



What is Revit?

Revit is one of the Commercial programs for BIM (Building Information Modeling)

Ensured design quality through improved design errors deduced by using 3D Modeling, increased accuracy through building information and increased work efficiency through design automation



LATS REVIT 3D DRAWING TOOL

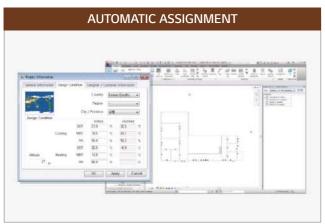


LATS Revit Features

LATS Revit has specially adapted feature to LG HVAC products.

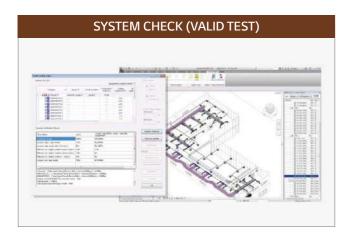
Support Range

Design for LG air conditioner, refrigerant piping, drain piping, control solution generate the equipment schedules



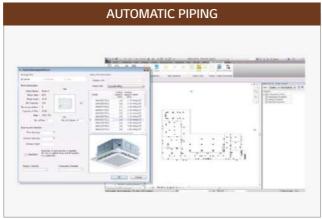
01 Automatic Assignment 02 Aut

After calculating room load, assign the indoor unit automatically



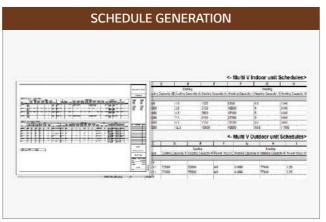
03 System Check (Valid Test)

Verify your system design with System Check function (If you have a wrong design, the LATS Revit shows you that for your correction)



02 Automatic Piping

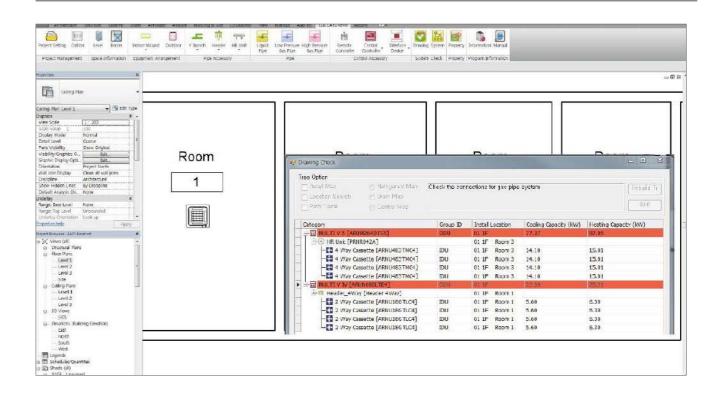
Connect ODU and IDU's to the pipe by a few steps (LATS Revit suggests a kind of connection for user selection)



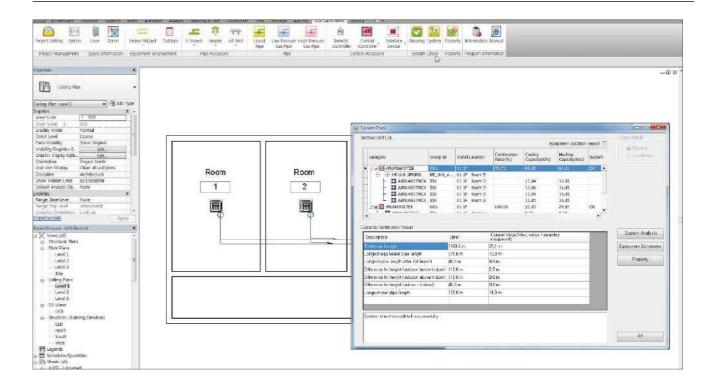
04 Schedule Generation

The schedules have some useful information for you and your clients like system capacity estimation and quotation draft.

Auto Pipe Sizing & Branch Selection



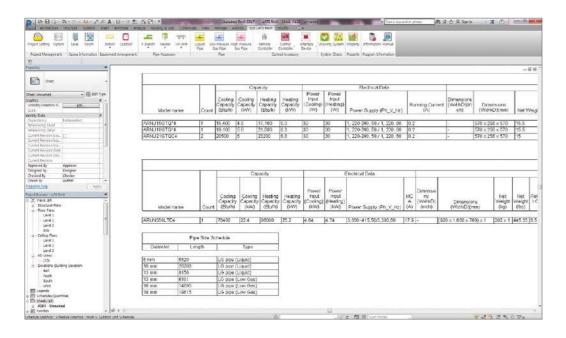
Check System Design



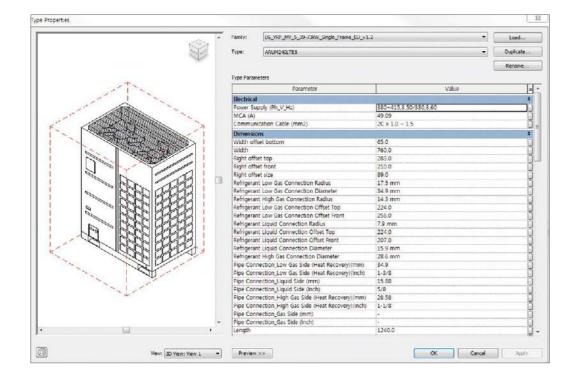
LATS REVIT 3D DRAWING TOOL



Auto Equipment Schedule



Provision Revit Family



RO LATS CFD ENG. MODELING

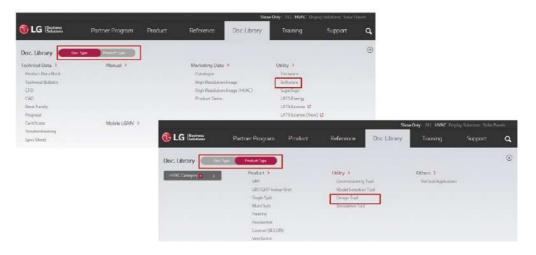
How to Download?

You can download LATS Revit from the B2B partner portal. In the following location, select the right version of LATS Revit that meets the specifications of your PC.

http://partner.lge.com/ >

Select Location > Doc. Library > Doc. Type > Utility > **Software**

> Product Type > **Design Tool**

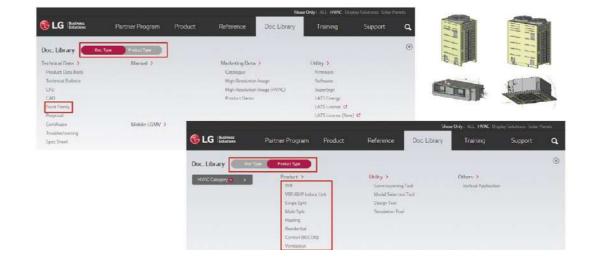


How to Download Revit Family?

You can download Revit Family from the B2B partner portal. In the following location, select the right version of LATS Revit that meets the specifications of your PC.

http://partner.lge.com/ >

Select Location > Doc. Library > Doc. Type > Technical Data > Revit Family > Product Type > Select Product > Revit Family

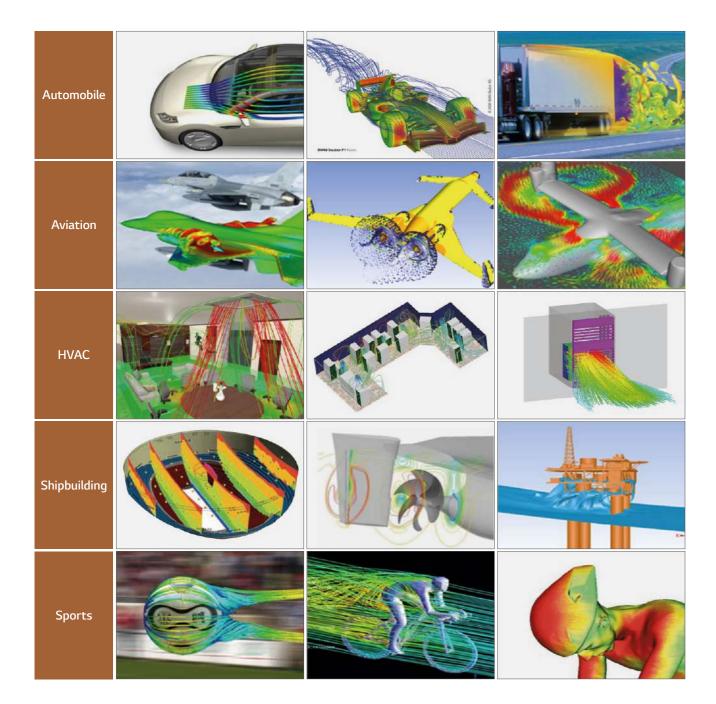




Computational Fluid Dynamics

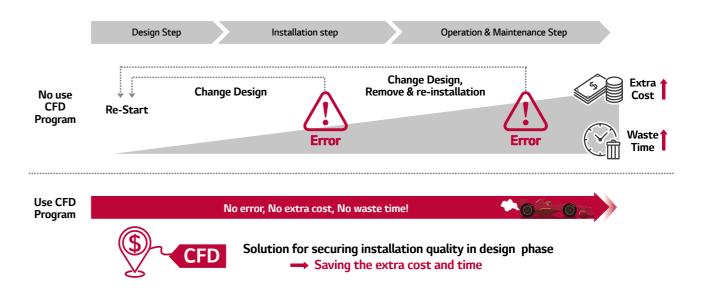
CFD Introduction

CFD is being practically used in various industries, and it is being considered as an integral item for the development of products and their applications.

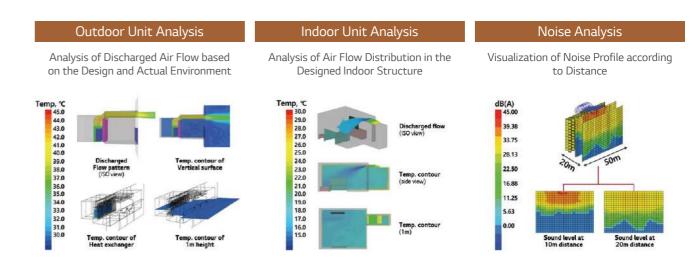


CFD Introduction

Airflow analysis through the CFD can be utilized at all steps from business kick-off phase to maintenance phase. Especially, It is possible to secure quality design step through the optimal / differentiative.



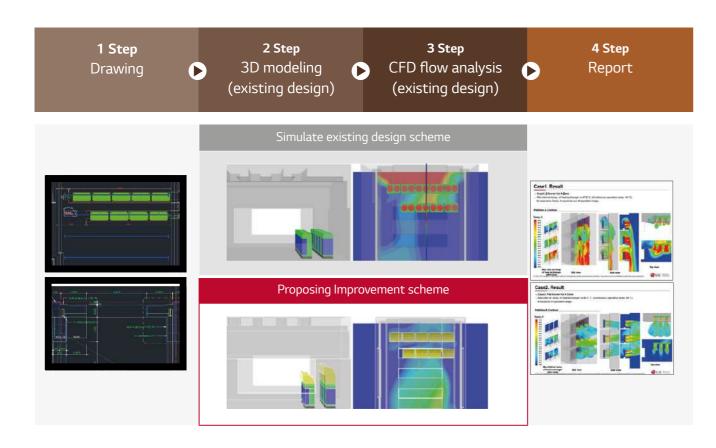
Engineering team of HQ offers three kinds of CFDs. (Outdoor Unit Analysis, Indoor Unit Analysis, Noise Analysis)





CFD Analysis Work Flow

From checking the project information to reporting, it consists of 4 steps.



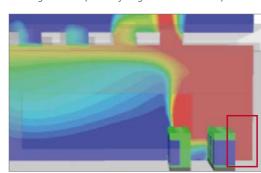
How to Understand CFD Analysis

- 1. Check if there is recirculation (short cycling) or not.
- 2. Blue color is good condition / Red color is bad condition.

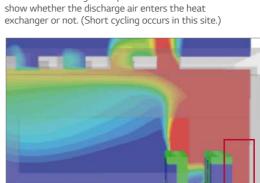




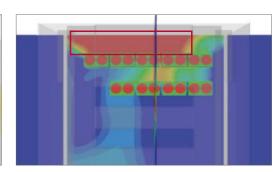
look at the discharge flow pattern. You have to



Temperature 35 mean

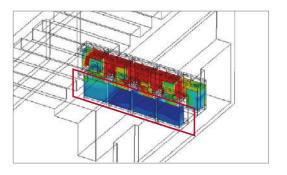


03 Section temp. contour (Side View) When you see the contours, you have to check the outdoor air temperature. color around the heat exchanger.



02 Section temp. contour (Z=1 m, Top View) When you see the red color, It means that power consumption

can be increased and the performance of the product can be decreased

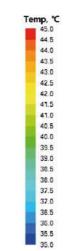


04 Inlet air temp. of heat exchanger (ISO View)

When you see the blue color, It means there is no recirculation.

Approximate capacity verification is possible through the inlet air temp. of heat exchanger.

Ex) Assume the inlet air temp. of heat exchanger is 48 $^{\circ}$ C. If max inlet air temp. of heat exchanger is 48 $^{\circ}$ C, Total capacity will be decreased by 27%.



42.5 42.0

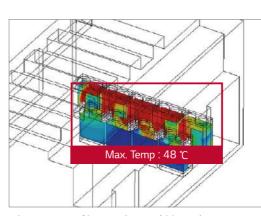
41.5

41.0

40.5

40.0 39.5

39.0 38.5 38.0 37.5 37.0 36.5 36.0 35.5 35.0



ince an eemp. of near exemanger (150 view)	Inlet air temp. of h	neat exchanger (ISO View)
--	----------------------	---------------------------

		Indoor air temp. (DB/					
Combination	Outdoor air		6	27 19			
(%)	temp. (DB, °C)	1	8				
		TC	PI	TC	PI		
	10	52.4	5.49	56:0	5.93		
	12	52.4	5.67	56.0	6.09		
	14	52.4	5.91	56.0	6.35		
	16	52.4	6.16	56.0	6.65		
	18	52.4	6.40	56.0	6.98		
	20	52.4	6.77	56.0	7.47		
	21	52.4	7.01	56.0	7.73		
	23	52.4	7.52	56.0	8.29		
100	25	52.4	8.04	56.0	8.88		
	27	52.4	8.60	56.0	9.48		
100	29	52.4	9.18	56.0	10.14		
	31	52.4	9.79	56.0	10.82		
	33	52.4	10.44	56.0	11.54		
	35	52.4	11.12	54.0	12.31		
	37	52.4	11.78	56.0	12.90		
	39	52.4	12.48	56.0	13		
	41	51.6	13.18	53.7	7		
	43	49.8	13.81	51.5	2		
	46	46.7	14.65	4 .0	110		
	48	40.3	12.	40.9	13.06		

294 | 295

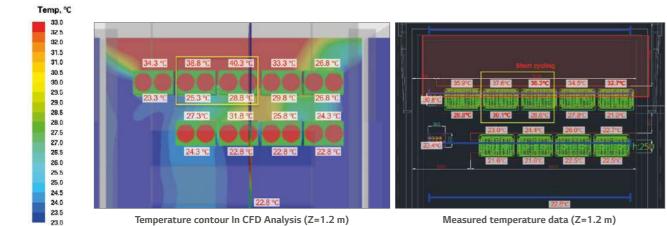


Comparison Between CFD and Measurement

If appropriate models and boundary conditions are selected, reliable CFD results can be obtained.

Ex) Product type: MULTI V 5 (9EA, UXB chassis) / Ambient temp. 22.8 °C / Operating ratio: 100%

- In CFD Analysis, Max. inlet air temp. of heat exchanger is 40.3 $^{\circ}\mathrm{C}$
- In actual measurement, Max. inlet air temp. of heat exchanger is 37.6 $\ensuremath{\mathbb{C}}$
- > Difference between CFD Analysis and actual measurement is only 2.7 $^{\circ}\mathrm{C}$



Global CFD Analysis (8 cases)

You can download the 8 types of CFD analysis case book from the Global B2B Partner Portal

 $http://partner.lge.com/global > Doc.Library > Technical \ Data > CFD$

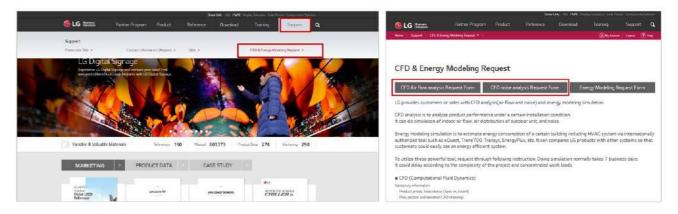
NO.	1	2	3	4	5	6	7	8
Туре	'U'-shaped building	Necessity of air-guide	Additional exhaust fan	Sunken structure	Multiple outdoor units installation	High-rise building	Z-Louver installation	The influence of louver angle
lmage						TTTTTTT		
Definition	ODUs are installed deep inside the building from outer walls.	Air-guides are necessary to achieve smooth discharge flow.	Generally, additional exhaust fan is not recommended.	4-sides of ODUs are blocked with side walls.	Multiple number of ODUs are installed.	Discharge flow from lower floors may recirculate into the upper floor's ODUs.	Louver with Z-shape bend.	Discharge flow depends on the louver angle.
Solutions	1) Relocate the ODUs near outer wall. 2) Make air guide to outer wall	1) Install air guide towards the outside. 2) Discharge area should be larger than fan area	1) Select fan equivalent to ODU's air flow rate. 1) Make sure to operate exhaust fan when ODUs are operated.	Install air- guide Install gallery on side wall. Reduce ODU numbers.	1) Make heat exchanger facing away each other. 1) Keep distance between ODUs.	1) Install air-guide. 2) Optimize louver shape. 3) Relocate the ODUs.	1) Remove the Z-louver. 2) Change louver type to Flat louver.	1) Recommended louver angle : 0 ~ 15 degrees

RO LATS **CFD** ENG. MODELING

Request Process

From the Global B2B Partner Portal (http://partner.lge.com/global/), you can download the request form of CFD Analysis (Air flow & Noise) and do a request of CFD analysis.

http://partner.lge.com/global > Support > CFD & Energy Modeling Request



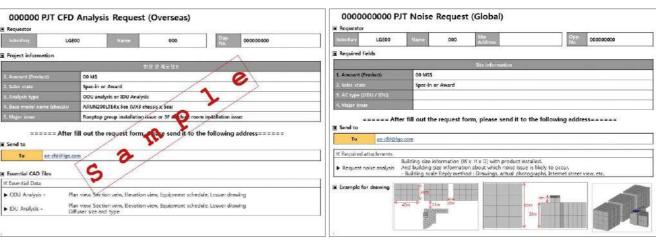
Request Form

Request Step

- 1 . Download the request form
- 2 . Fill in the form
- 3 . Send request via following email address **Email : ae-cfd@lge.com**

Necessary information

- Product prices, Sales status (Spec-in, Award)
- Plan, section and elevation CAD drawings
- Louver specification and Ambient temperature.
- Product specification (Model name, chassis)
- CAD file is necessary



CFD



Outdoor Unit Analysis

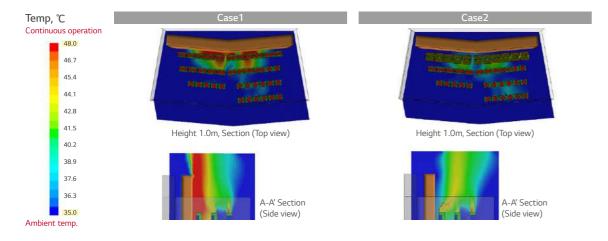
Project Scope

Outdoor units installation space on the rooftop was surrounded by the 4m height wall.

There are also 3 openings 1m high in the front and 7m high billboard behind .

Summary

Because of outdoor unit group installation, Inlet air temp. of heat exchanger of outdoor unit in the middle is expected to exceed operation range. Therefore, discharge air guide was installed like Case 2. As a result it made the outdoor unit to absorb fresh outside air.



Indoor Unit Analysis

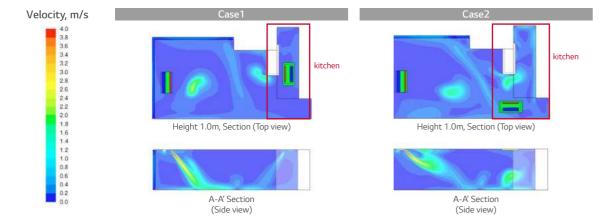
Project Scope

This is a project to determine the location of indoor units in the kitchen.

The CFD analysis was conducted, and LG advanced the opinion on the optimal location to this project.

Summary

Looking at the velocity distribution, Case 2 showed better results than Case 1 in the kitchen. Case 2 shows a more even airflow distribution in the floor including the kitchen compared to Case 1.



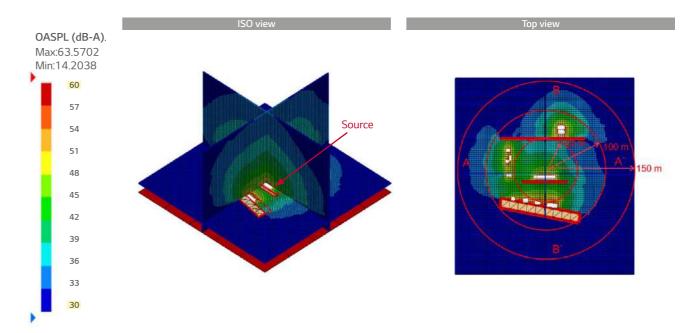
Noise Analysis

Project Scope

The outdoor unit is installed on the roof of four buildings, and the noise distribution at a distance of about 150m was analyzed.

Summary

The noise value at a distance of 150m due to the installation of the outdoor unit is seen to be about 32~35dB, and it is expected that there will be little effect of the noise caused by the outdoor unit.



ENERGY MODELING SIMULATION



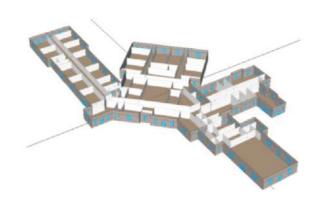
Energy Modeling Simulation

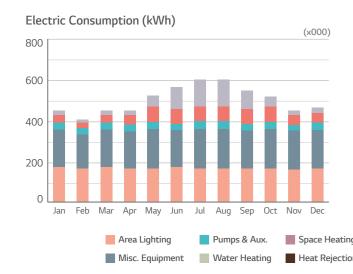
Energy Modeling Simulation is widely used for estimation of energy usage, certification such as LEED, BREEAM, etc., and design guide of new buildings as well as existing buildings for energy improvements.

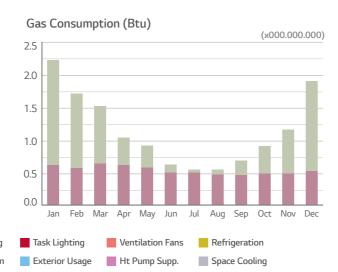
Energy Modeling Simulation uses globally Certified Program

(such as eQuest, Trane700, EnergyPlus, etc.)

- Computer based tools
- Simulates annual energy usage of a building
- Methodical and iterative process to evaluate potential
- decisions and achieve long-term goals
- Various design considerations prior to the construction phase





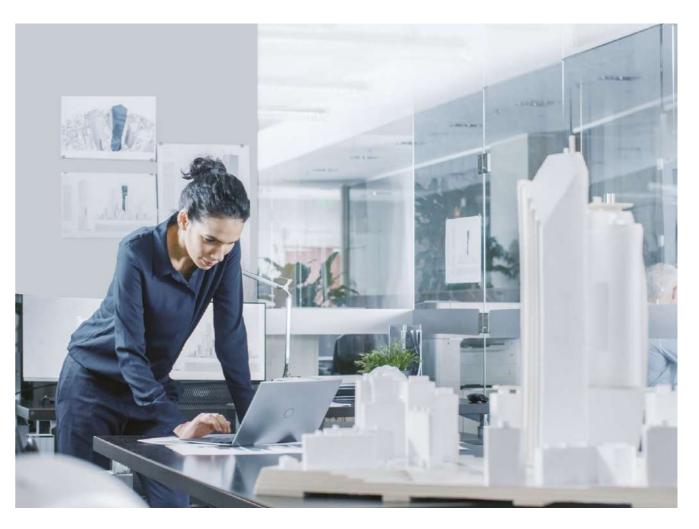


Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	17.8	16.1	19.0	21.0	51.4	98.7	131.8	124.6	75.9	35.4	19.7	17.8	629.2
Heat Reject.	-	-	-	0.0	0.5	2.7	4.6	4.3	1.4	0.1	0.1	-	13.7
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	-	-	-	-	-	-	-	-	-	-	-	-	-
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent. Fans	46.2	41.7	47.5	59.0	74.9	72.5	73.2	74.8	75.9	68.6	49.1	46.3	729.7
Pumps & Aux.	33.2	30.0	33.3	32.5	35.4	37.3	40.2	39.8	36.0	34.6	32.3	33.2	417.7
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	183.4	165.7	183.4	177.5	183.4	177.5	183.4	183.4	177.5	183.4	177.5	183.4	2,159.6
Task Lighting	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lighting	173.1	156.3	173.1	167.5	173.1	167.5	173.1	173.1	167.5	173.1	167.5	173.1	2,038.0
Total	453.7	409.8	456.3	457.5	518.8	556.1	606.3	600.0	534.2	495.3	466.1	453.8	5,987.8

Who Uses Building Energy Modeling and Why?

Energy Modeling Simulation allows users, such as engineering firms, to access HVAC system efficiency and adjust building's features to meet the needs of owners and occupants while reducing energy bills.



01 CERTIFICATION

LEED EA Credit 1:
Baseline model per
ASHRAE 90.1 App. G
and Proposed model
per final construction
Documents



02 FINANCIAL

Prioritize investment strategies.



03 EXPLORATION

Investigate new/ alternative design strategies.



04 OPTIMIZATION

Inform the design and decision making process.



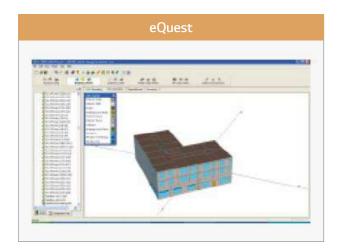
ENERGY MODELING SIMULATION



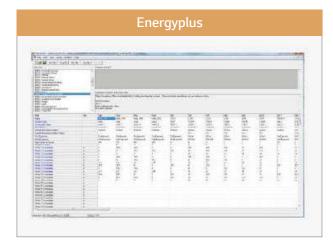
Software for Energy Modeling

There are various types of energy modeling software by DOE-21) based tools or other's. Plus, each tool has particular function and feature.

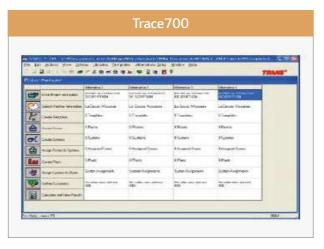
DOE-2 based tools : eQuest, EnergyPro, EnergyPlus



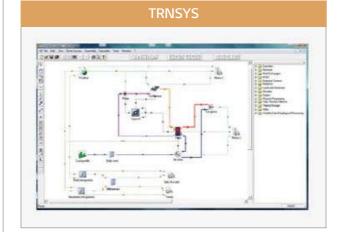




Other: Trace700, Carrier HAP, TRNSYS, ISE-VE, ESP-r







Software for Energy Modeling

Sample PJT

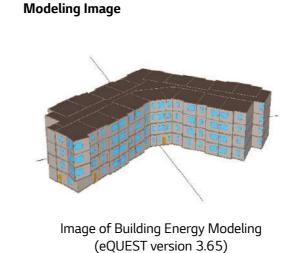
The building is a 6,300m²(68,000ft²) and 4-floor residential facility. As the replacement of the originally designed PTAC(Packaged Terminal Air Conditioner) and the electric heater, the high efficiency air-cooled VRF system has been proposed in consideration of comfort of the area and user's convenience. Also, verification work has been requested for energy consumption reduction effect during actual utilization of the building.

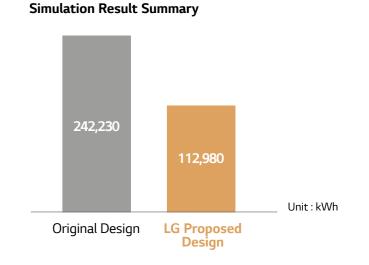
6,300m2(68,000ft2), 4-floor residential facility



Sample PJT

The results confirmed that annual energy consumption reduction provided by the air-cooled VRF system is approximately 53.4%, and the result delivered to customer.



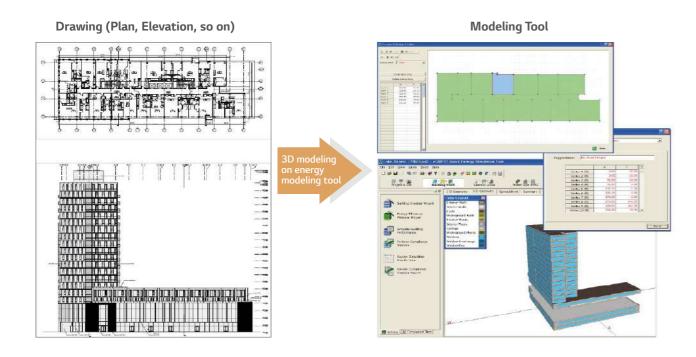


ENERGY MODELING SIMULATION

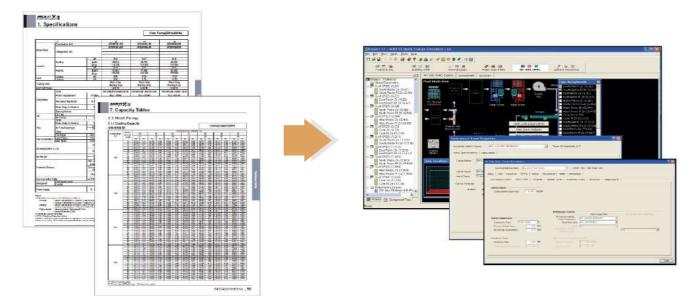


Energy Modeling Simulation

First, 3D building model is made for energy simulation on energy modeling tool with drawing file (plan, elevation so on)



For energy modeling, modeling tool need performance data of product from manufacturer. LG provides performance data for energy modeling tool like eQuest, Trace700, so on.

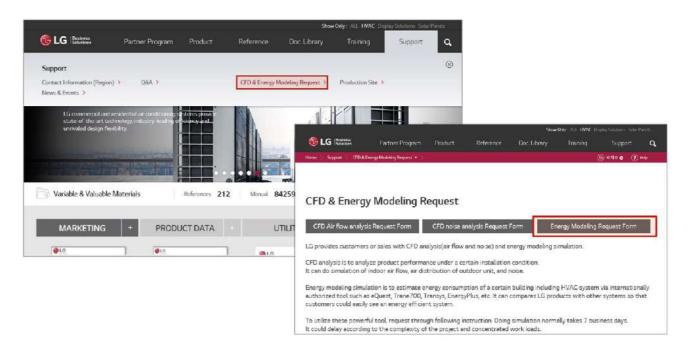


ENG. MODELING

Request Process

From the Global B2B Partner Portal (http://partner.lge.com/global/), you can download the request form of Energy Modeling and do a request of Energy Modeling Simulation.

http://partner.lge.com/global > Support > CFD & Energy Modeling Request



Request Process

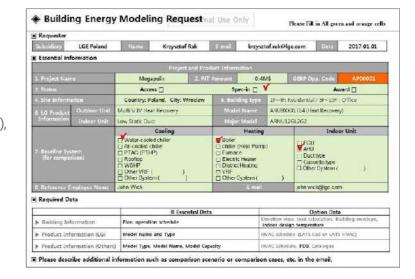
Energy Modeling Simulation

Request Step

- 1. Download the request form
- 2. Fill in the form
- 3. Send request via following email address Email: ae-energymodeling@lge.com

Necessary information

- -Project name, baseline system(for comparison), proposed system(LG products)
- Plan drawings (CAD file is the best, but PDF files are acceptable)





BRAND BUSINESS PRODUCTS ENGINEERING ONLINE LG
TOOL HVAC GUIDE

ONLINE LG HVAC GUIDE

ONLINE LG HVAC GUIDE

Process Guide
Partner Portal
Mobile Application

308 321

PROCESS GUIDE

ONLINE LG HVAC GUIDE

PROCESS GUIDE



How to Subscribe to LG Air Solution Product & Marketing Information

EU customers can get the latest info about LG SAC business by submitting the form below.

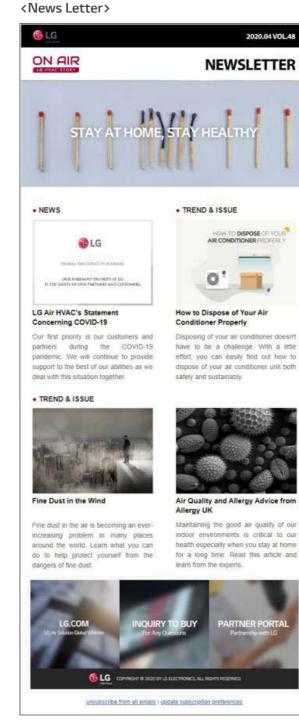
<Registration Page>

Gett	the latest news about LG HVACI
	Please fill in the blanks below!
	er and marketing info, though your e-mail or social-media channel.
	// (17.40)
First Name *	Last Name *
Tinknie	Lait same
Country *	
	•
Please select the country of residence for your by nationality.	pilvess, ref.
	Job Title *
Company Name *	Job ittle "
15 Betroois, inc	
Phone *	Email *
0000000000	example@ips.com
Vertical *	
Office Shopping Mall	Retail Hotel Residential
O Public Facility O Educatio	n C Factory C Etc.
Customer Type *	
	staller / Contractor Consultant
○ HVAC Engineer ○ Procure ○ Student ○ Etc.	ement O Interior Designer O Home Owner
O Student O Etc.	
Privacy Policy	

QR Code: Quick Access Way



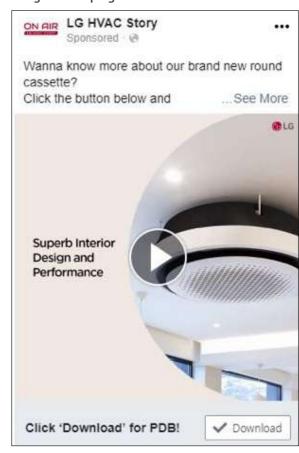
Android / iOS URL: https://gcacs.lg.com/l/760323/2020-04-07/21f7d



<Product Info>



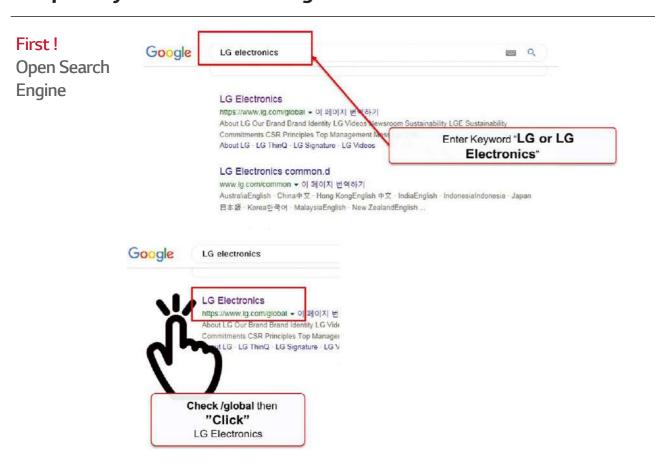
<Digital Campaign>



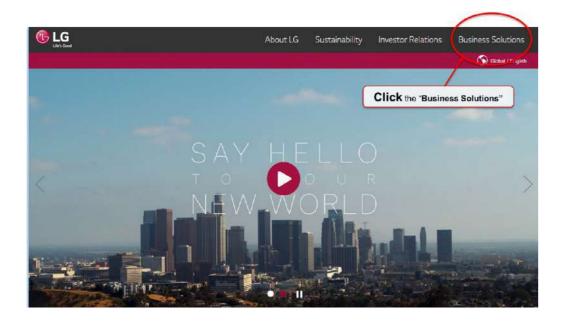
ACCESS GUIDELINE



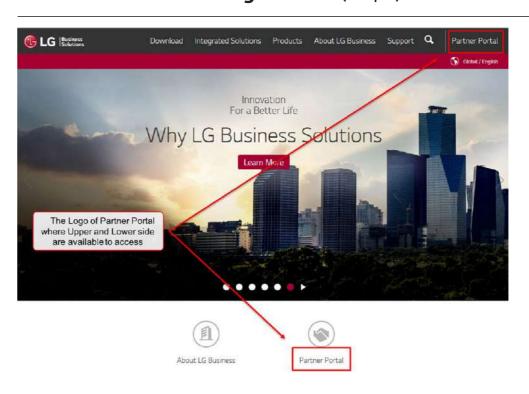
1. Input Keyword on Search Engine



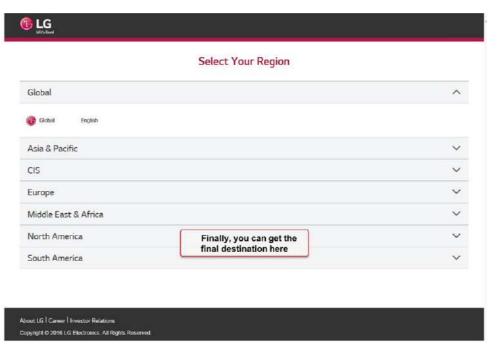
2. Go to Website for Registration (Step1)



3. Go to Website for Registration (Step 2)



4. Go to Website for Registration (Step3)



^{*}If you have any inquiry, please E-mail to lg.partner.portal@lge.com

OBILE APPLICATION

PARTNER PORTAL

ACCESS GUIDELINE



5. Select Portal and Access Signing Up

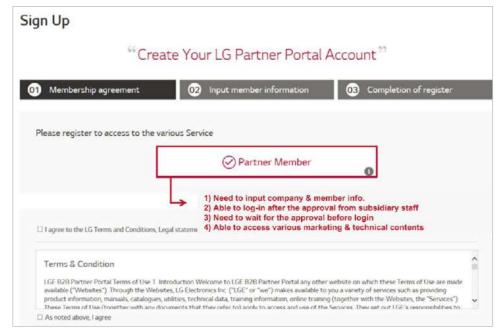
If you access the gateway of B2B partner portal, you can select your region or country to join contents on the portal, members need to sign up.



^{*}If you have any inquiry, please E-mail to lg.partner.portal@lge.com

6-1. Sign Up by Member Type

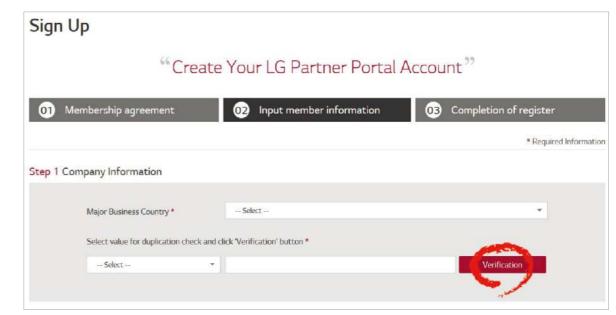
To sign up the portal, members need to select the type of members $% \left\{ 1,2,\ldots ,n\right\}$



^{*}If you have any inquiry, please E-mail to lg.partner.portal@lge.com

6-2. Sign Up by Member Type

To sign up the portal, members need to select the type of members

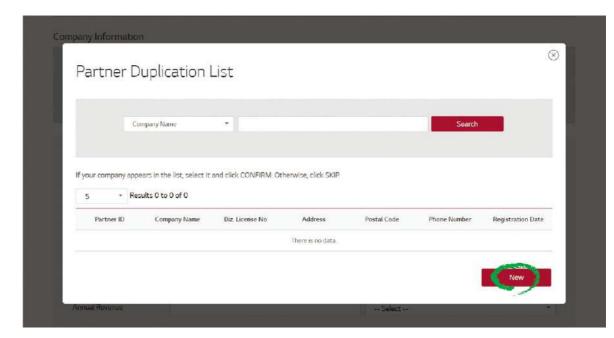


Please input the data and click "Verification"

7. Input Company Information

Please check up your company name first.

If you cannot find duplication list, then click "New" on the pop-up window.



MEMBER REGISTRATION

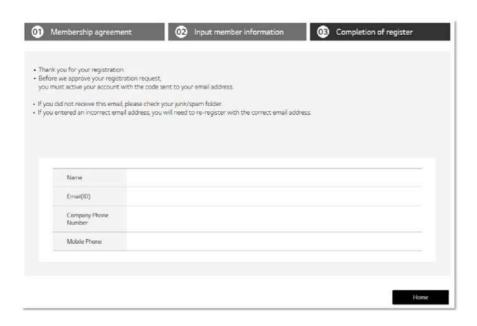


8. Complete Information

Fill out the form and click "Next" button.

o a recovered to the Williams		
ic Information Of Your C	company	
Carrying Products ⁴	Multi V Multi V Single CAC Hoopitality TV Monitor Signage	
	148	many product you are carrying
Primary Customer Vertical *	Select	
Secondary Customer Vertical	Sefect	
Partner Type *	Select	*

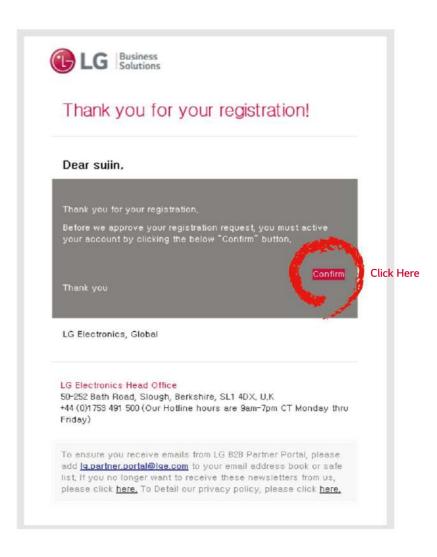
We don't want false information such as the Simpsons



PROCESS GUIDE PARTNER PORTAL MOBILE APPLICATION

9. E-mail Confirmation

You will receive an authentication mail to confirm the registration. If you get the email, please click the "Confirm" button. After your account is activated, LGE staff will check your registration and approve you to join LG B2B Partner Portal. Please wait until the approval is completed by LGE staff.



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ONLINE LG HVAC GUIDE

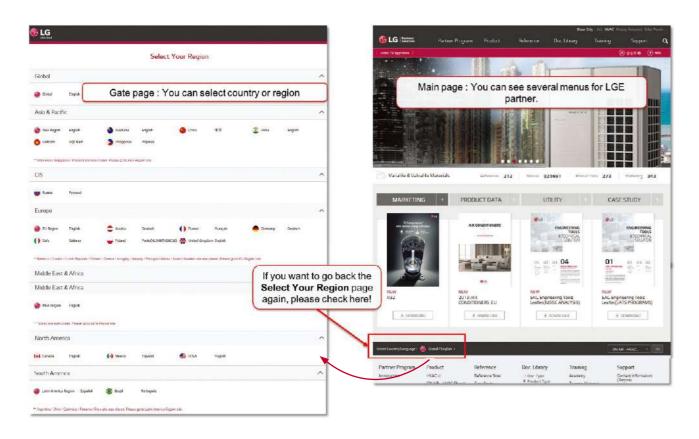
PARTNER PORTAL

HOW TO FIND ENGINEERING MATERIALS



B2B Partner Portal (http://partner.lge.com)

You can download various materials in B2B Partner Portal.



Add new search method and various convenient functions.

Previously (I don't get it)

- Search by document type only



Now (Much better)

- 2 ways to search
- : add search by product type and maintain search by document type



- Unfolding type interface
- Convenient function: My documents, easy and quick Q&A
- Apply new search engine : natural search, improvement search speed

ROCESS GUIDE PARTNER PORTAL MOBILE APPLICATION

Product verification

Before you start, you have to check "HVAC" at the top of the screen.

Chiller Air Handling Uni



Way to Search

Previous



NEW



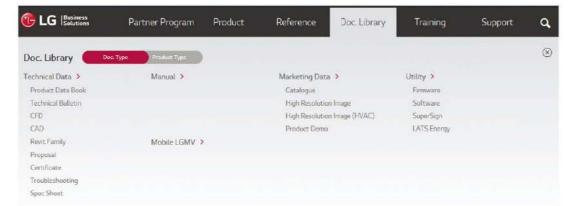
HOW TO FIND ENGINEERING MATERIALS

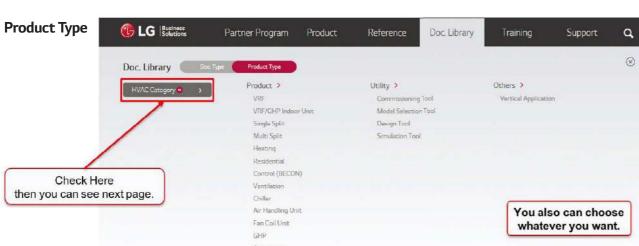


Way to Search on the Doc. Library

You can download many materials in B2B Partner Portal

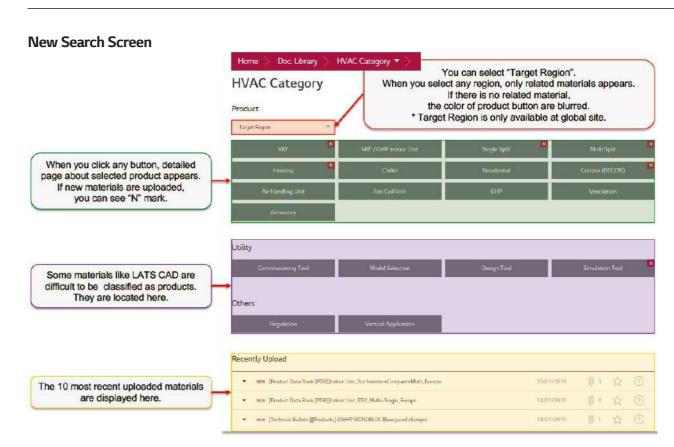




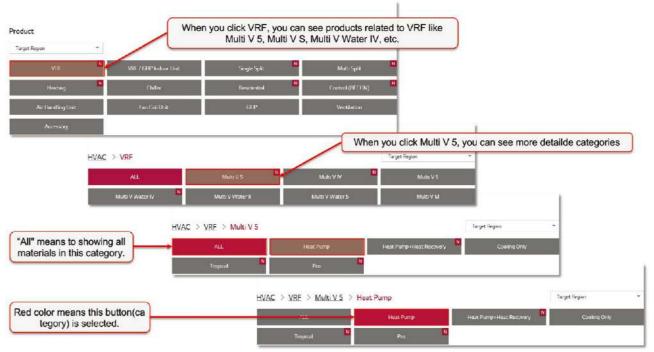


PROCESS GUIDE PARTNER PORTAL MOBILE APPLICATION

Product Type Search



HVAC Category



316 | 317

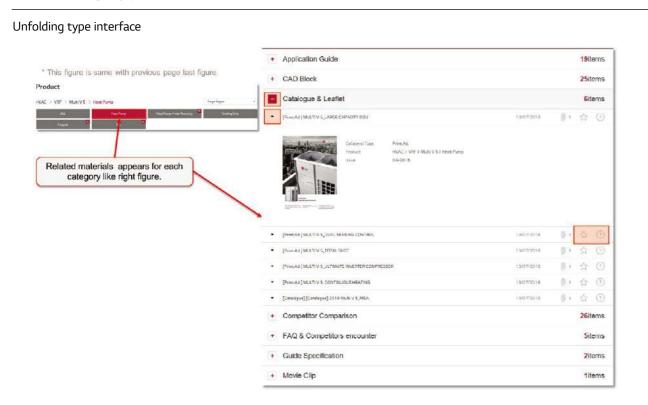
ONLINE LG HVAC GUIDE

PARTNER PORTAL

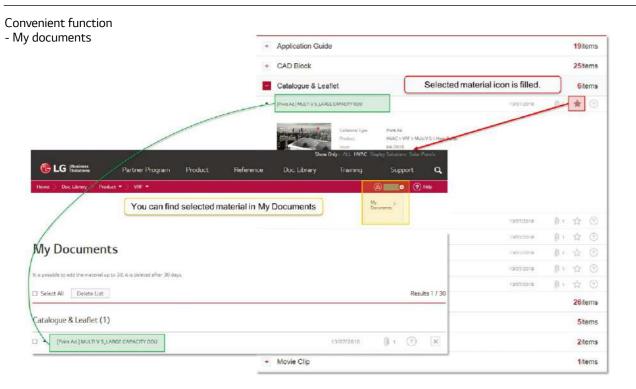
HOW TO FIND ENGINEERING MATERIALS



Unfolding Type Interface

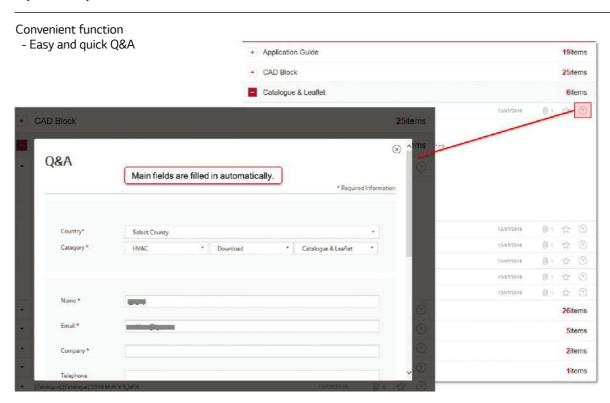


My Documents

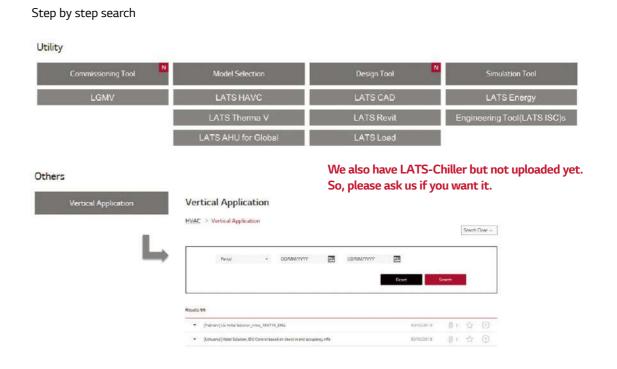


ROCESS GUIDE PARTNER PORTAL MOBILE APPLICATION

Quick Q&A



Utility & Others Type Search



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ONLINE LG HVAC GUIDE

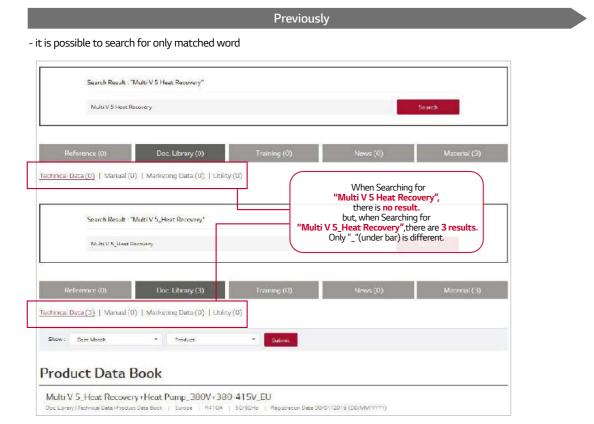
PARTNER PORTAL

HOW TO FIND ENGINEERING MATERIALS



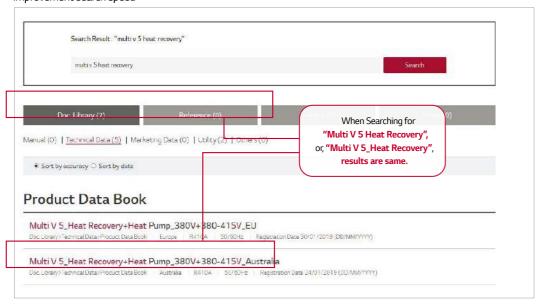
New Search Engine

Add new search method and various convenient function



New

- Natural search
- Improvement search speed



ROCESS GUIDE PARTNER PORTAL MOBILE APPLICATION

MOBILE APPLICATION

WHAT IS THE CAC PARTNER APP.?



Among many contents of the B2B partner portal, only the information necessary for sales is collected on mobile. Quickly find, download, and use the information you need in the field.

DELIVERY PROCESS CONTENTS 01 CATALOGUE REGIONAL PARTNER **02** VIDEO **PORTAL 03** PROPOSAL **04** CONTACT INFORMATION **NOW** website (PC) n of HQ or Local **GLOBAL** PARTNER **PORTAL NEW EMPLOYEE 01** PDB **02** TECHNICAL BULLETIN **03** TROUBLE SHOOTING **GUIDE 04** CFD Account for Log-in: - Partner: same as the B2B Partner portal - Employee : via mobile EP Connecting to mobile

320 | 321

(Wi-Fi or mobile data)

MOBILE APPLICATION

^{*} Disclaimer. All Product, Product Specifications and Data in this catalogue are subject to change without notice to improve reliability, function or design or others.

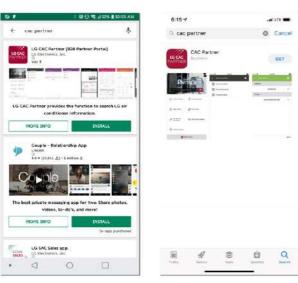
CAC PARTNER APP.



How to Install?

Among many contents of the B2B partner portal, only the information necessary for sales is collected on mobile. Quickly find, download, and use the information you need in the field.







 $\label{lem:condition} And roid $$ URL: https://play.google.com/store/apps/details?id=com.lge.cac.partner $$ $$ (a.c., a.c., a.c.,$

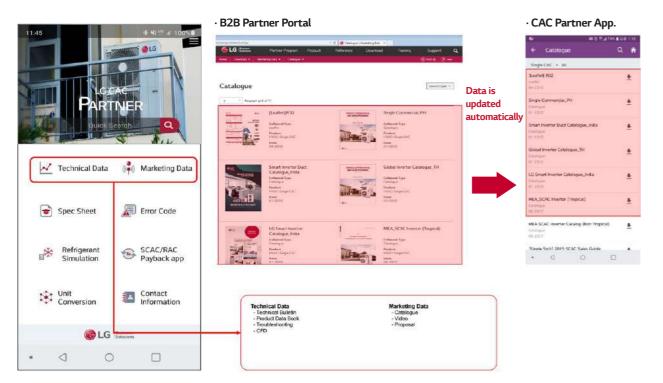


iOS
URL: https://itunes.apple.com/kr/app/cac-partner/id1445374604?l=en&mt=8



Main Screen

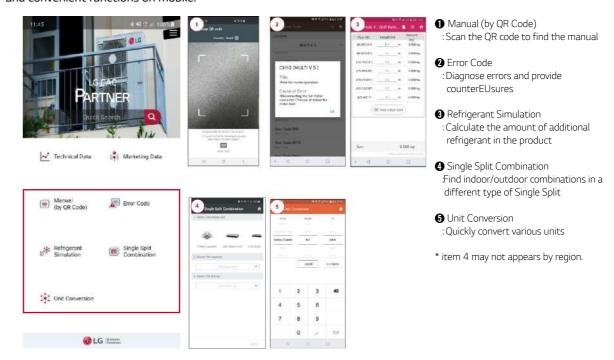
The data of app. is directly linked to the portal. To get a wide range of useful information, you need to increase portal's resources.



ROCESS GUIDE PARTNER PORTAL MOBILE APPLICATION

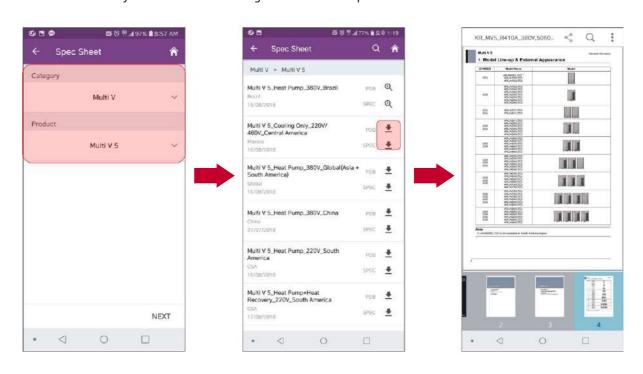
Main Screen

If you access the Partner App. through your local account of B2B partner Portal, You can use the various contents and convenient functions on mobile.



Examples of Main Features

You can immediately download the technologies and sales data provided on the web.

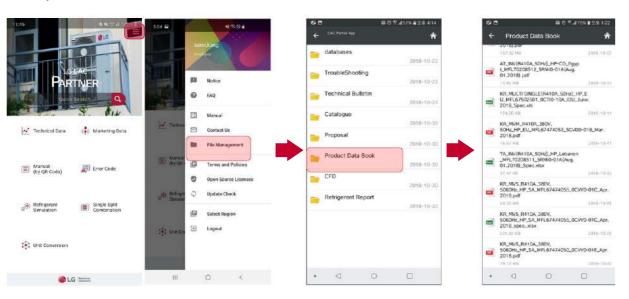


CAC PARTNER APP.



Examples of Main Features

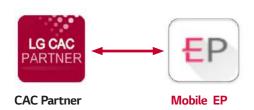
The stored files can be opened continuously by using the file management. It is very useful even in an internet-free environment.



New Function: Employee Login by EP e-mail

Current version (Only for Android)

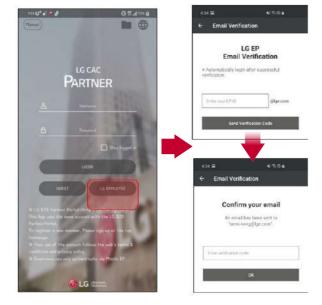
Employee authentication login method through Mobile EP



- * Login is not possible without installing Mobile EP
- * iOS version of Mobile EP is not available. (App login was not for iOS users.)

It was a problem of this APP caused by expanding usage.

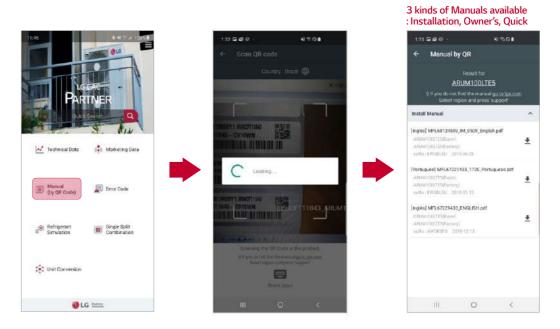
New version (Available for both Android & iOS users)



If your first e-mail authentication is successfully finished, you are automatically logged in as long as you don't log out.

New Function: QR Code Scan for Manual

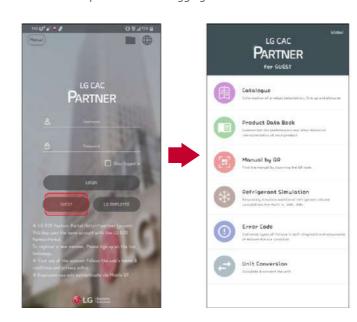
You can scan the QR code on the product label to open the manual of that model. It is able to immediately check the materials with one scan.



New Function: Guest Mode

New version (Possible for both Android & iOS)

Data can be opened without logging in



CAC SERVICE APP.



1. LG CAC Service App.

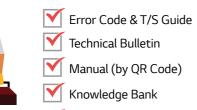
Provide solutions for fast and accurate service (cause analysis, action guide), and secure overseas service quality.













Engineering Tools







2. Main Function

LG CAC Service App Main Function.



Error Code & Trouble Shooting

Error Code Search and Mobile Version Action Guide



Integration of documents related to service maintenance distributed in each server (B2B Portal, GSCS)

- -Technical Bulletin
- -Manual (by QR Code)
- -Knowledge Bank (Local Know-How)



Engineering Tool

Provide convenience function

- -Refrigerant Calculation
- -Unit Conversion
- -Dip Switch Setting Guide
- -Remote Call



Etc.

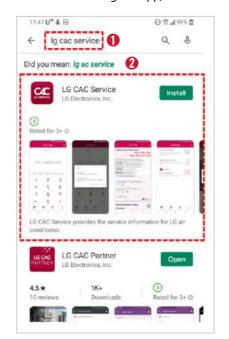
Provide add-on

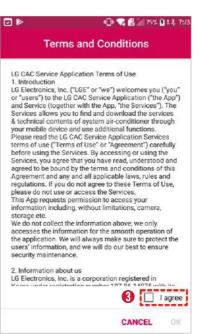
- -File Manager
- -Contact Information

MOBILE APPLICATION

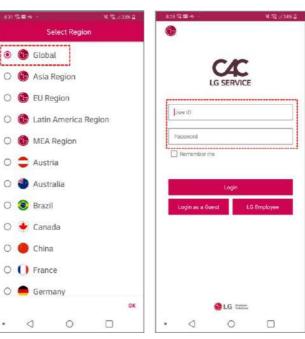
3. How to Install

Search for "cac service", "Ig cac service" in the Google Play Store. After downloading the app, Check the terms and conditions.





4-1. How to Use (Login)



Input ID and Password

- If you have B2B Portal Account
- This app account is same as B2B Portal account

Register a new account

If you don't have B2B Portal Account

Select region (19 regions)

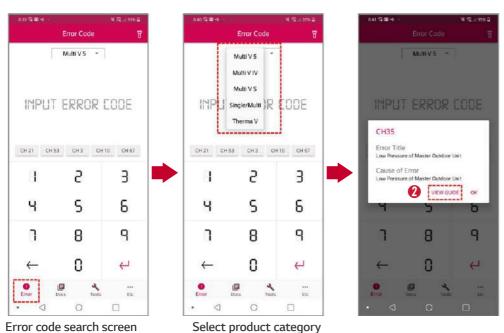
326 | 327

CAC SERVICE APP.



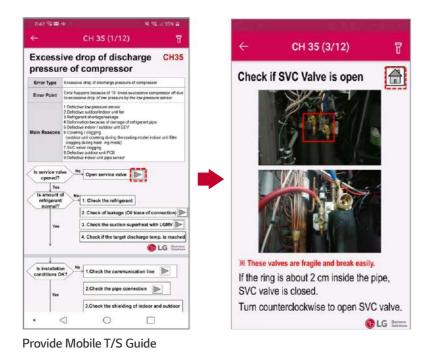
4-2. How to Use (Error Tab)

Click "Error" Tab for checking Mobile Trouble Shooting Guide.



- You can simply see the title and cause of the error code.
- If you want to see more details, Click "VIEW GUIDE"

You can check Mobile Trouble Shooting Guide.

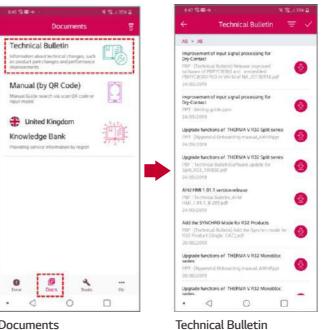


- If you want to see the details, Click """ and if you want to go back, Click " ()"

MOBILE APPLICATION

4-3. How to Use (Docs Tab)

Click "Docs" Tab for checking Documents about models.

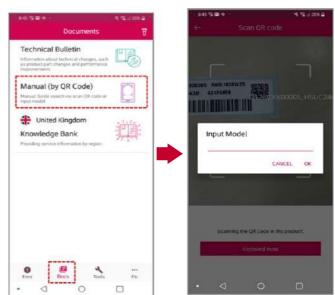


- You can see Technical Bulletin just like B2B Portal
- It provides technical details such as new function or logic of LG products.

Documents

- 1. Technical Bulletin 2. Manual (by QR Code) 3. Knowledge Bank

Click "Docs" Tab for checking Documents about models.



Manual by QR Code

- You can check manuals using QR Code
- If you cannot find QR Code, Input model name. Then you can check manuals.

Documents

- 1. Technical Bulletin
- 2. Manual (by QR Code)
- 3. Knowledge Bank

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MOBILE APPLICATION

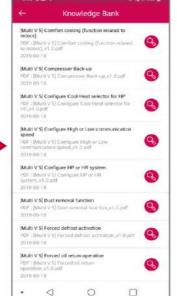
CAC SERVICE APP.



4-3. How to Use (Docs Tab)

Click "Docs" Tab for checking Documents about models.





- It provides information on service know-how.
- The Pilot version provides the same content for all regions. (refer to Netherlands Knowledge Bank) It is just an example.
- After own server development is completed, We will operate a separate knowledge bank in each region. Then if you send us a summary of what you are uploading to Knowledge bank, we can update it.

Documents

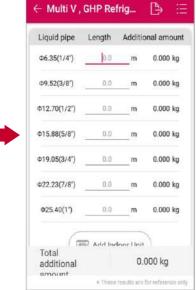
- 1. Technical Bulletin
- 2. Manual (by QR Code)
- 3. Knowledge Bank

Knowledge Bank

4-4. How to Use (Tools Tab)

Click "Tools" Tab for using convenient functions.



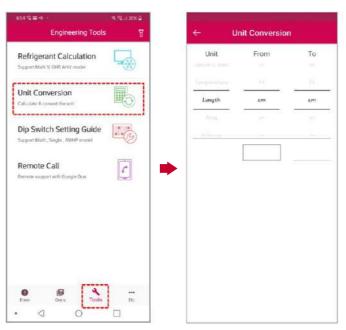


- You can use refrigerant calculation function
- This function helps to simplify complex calculations in the field.

Engineering Tools Refrigerant Calculation

4-4. How to Use (Tools Tab)

Click "Tools" Tab for using convenient functions.

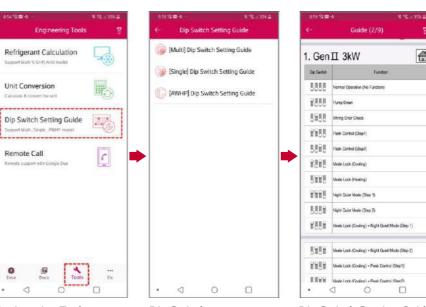


- You can use unit conversion function
- This function will be useful in the field.

Engineering Tools

Unit Conversion

Click "Tools" Tab for using convenient functions..



Engineering Tools Dip Switch Setting Guide

If you handle a model you don't know,
you can see how to set the dip switch
on the PCB

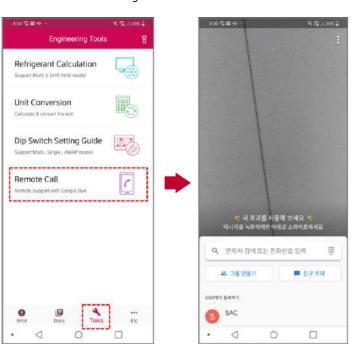
Dip Switch Setting Guide

CAC SERVICE APP.



4-4. How to Use (Tools Tab)

Click "Tools" Tab for using convenient functions.



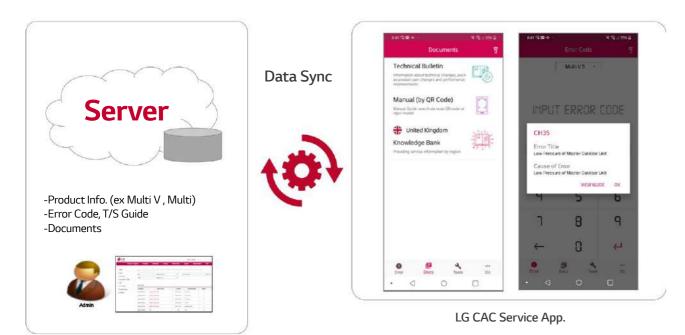
- You can use remote call to someone in your address book.
- If you want to show any situation, use this function.

Engineering Tools

Remote Call (Google Duo)

5. Main Function Structure

Load in real time according to server contents change.



Server and Administrator

MOBILE APPLICATION

1-1. How to Install?

LG THERMA V. SELECTOR

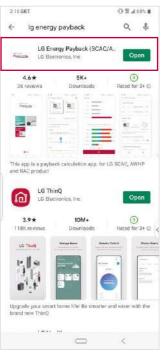
Search "LG Energy Payback" in Google Play Store.

Android

URL: https://play.google.com/store/apps/details?id=com.lg.smartinverterpayback

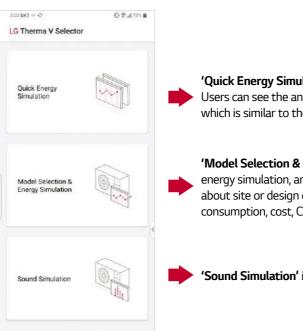


* iOS version will be available within 2020 on the Apple App Store.



· Google Play Store screen

1-2. Simulation Mode



'Quick Energy Simulation' is a quick & easy mode.

Users can see the annual energy consumption, cost, and CO₂ emission with several input, which is similar to the LG Therma V website version

'Model Selection & Energy Simulation' is to provide more information about model, energy simulation, and payback simulation. Users can select or input more information about site or design condition, then can see the suitable model, annual energy consumption, cost, CO₂ emission, and payback result

'Sound Simulation' is to see the calculated sound result

LG THERMA V. SELECTOR



2. Model Selection & Energy Simulation

Before choosing an air to water heat pump, many customers wonder how much energy costs can be saved compared to conventional heating systems, and how to select a product with the right capacity for the home. The LG THERMA V selector allows you to calculate annual energy costs and payback periods as well as model selection through sophisticated simulations through simple input values.



- City selection - Building area input
- Operation mode selection
- Operation rLoad input



Operation period selectionModel type selection



- Design condition input
 System selection to be compared
- Costs input for systems - Searching model that meets

3. Result

After the simulation, analysis results including initial investment cost, annual energy consumption, and payback period can be checked in the form of various graphs. Moreover, this report is provided in PDF format and can be shared by e-mail and messenger.



- Simulation conditions summary Initial cost
- Annual energy consumption



- Annual cost
 Annual CO₂ emission
 10-year LCC analysis
- Describite

 Of Solve

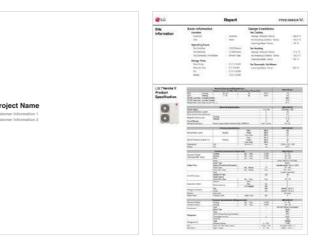
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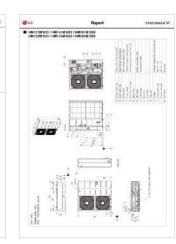
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 Solve
- 15-year LCC analysis
- Payback year - 15-year LCC analysis graph

4. Report







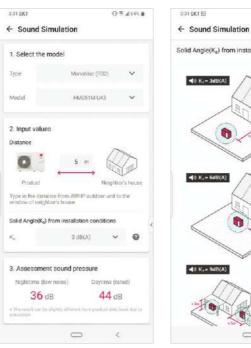
ONLINE LG HVAC GUIDE

MOBILE APPLICATION

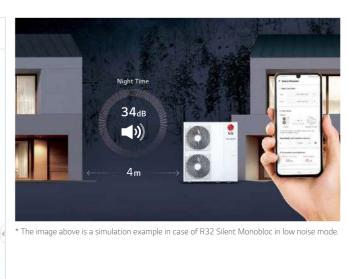
- Cover page
- Site information & design condition
- Product specification
- Annual energy consumption
- Life cycle cost
- Drawings

5. Sound Simulation

Consumers are also wondering how much sound level will be after installing the Air to Water Heat Pump product. Using the sound simulation function of Therma V selector, you can predict the expected sound pressure values in the daytime and nighttime according to the installation distance and conditions.



- Model selection
- Distance input
- Solid angle selection



- Reference for solid angle selection

INFRASTRUCTURE IN EUROPE



LG Air Conditioning Academy

LG has set up 20 official air conditioning academies in Europe, teaching much needed skills to thousands of current industry professionals including installers, consultants, designers, sales staff and service technicians. The academy program is being used to share expertise and educate these HVAC experts by providing a cutting-edge technical experience with the newest and most advanced technologies and equipments. Moreover, as LG's entire product range is installed on site, professionals can be trained in a realistic way that offers them the chance to experience the latest products first-hand.



LG Energy Lab in Europe

Committed to meet all requirements regarding energy efficiency and environmental demands, LG has invested in its own testing facility named the LG Energy Lab. LG Energy Lab is an innovative site dedicated to commercial and residential products for heating, ventilation and the latest energy efficient air conditioning solutions. Also as a showcase, LG Energy Lab is equipped with complete monitoring and control systems. The performance of all products will be tracked and analyzed by a team of Research and Development engineers based in France and Korea, ensuring efficiency and reliability during the whole product lifecycle.



European Air Conditioning Distribution Center

LG's European Air Conditioning Distribution Center is located in Tilburg, the Netherlands. Supplying and delivering products all over Europe, this distribution hub has contributed to smooth and rapid delivery, direct shipping for smaller orders and delivery tailored to air conditioners. The hub tries to manage inventory efficiency by taking advantage of LG EU's established inventory pool.



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