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THERMA V™

 Monobloc



LG Electronics

Commercial Air Conditioning

56, Digital-ro 10-gil, Geumcheon-gu, Seoul, Korea

www.lg.com <http://partner.lge.com> <http://www.lgethermav.com>

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Our vision...

As a leading heating supplier, LG's product portfolio comprises a wide range of highly energy efficient renewable energy systems, providing the right heating solution for any application and requirement.



What is LG THERMA V?

THERMA V is LG's Air to Water Heat Pump system, especially designed for new housing and renovation by LG's advanced heating technology with energy saving.

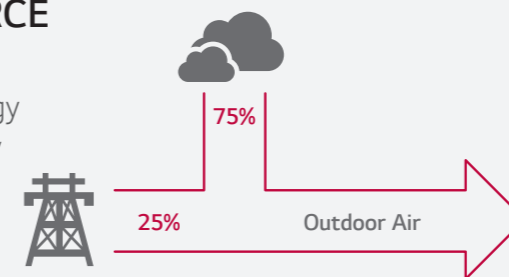
THERMA V can be used as various heating solution from floor heating to hot water supply with multiple heat sources.

ENERGY EFFICIENT APPLICATION

THERMA V offers the best solution for home heating and hot water supply with LG's inverter technology. It is 4 times more energy efficient than boiler system by absorbing energy from the outdoor environment.

AIR SOURCE

- Free energy
- Green energy
- Easy energy



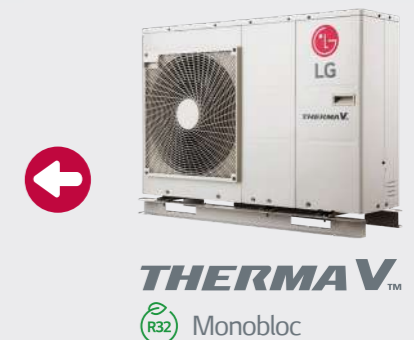
VARIOUS APPLICATION



RADIATOR

FLOOR HEATING

HOT WATER



Why LG THERMA V?

The LG THERMA V is designed to create customer values like energy saving, comforts, easy controls and services by applying the advanced technologies.

The LG Inverter Technology provides excellent energy efficiency with optimal components such as water pump, heat exchanger and fan motor.

Moreover, the pressure control technology provides stable heating capacity at low temperature and reaches target performance without difficulties.

Additionally, the differentiated structure like all-in-one type, black fin and users-oriented functions enhance professionals reputations as well as end-users happiness by experiencing the LG's full line-up from 5kW to 16kW in heating capacity.



Note

1. A+++ label is available from 26. Sep. 2019 and should be considered as A++ label until that time.

THERMA V™ R32
MONOBLOC



Excellent Performance

- High Energy Efficiency(SCOP4.45/A+++)
- Excellent Performance at Low Ambient Temperature(100%@-7°C)
- Wide operation Range
- Reduced Noise Level
- Revolutionary Scroll Compressor
- Flash Gas Injection

User Convenience

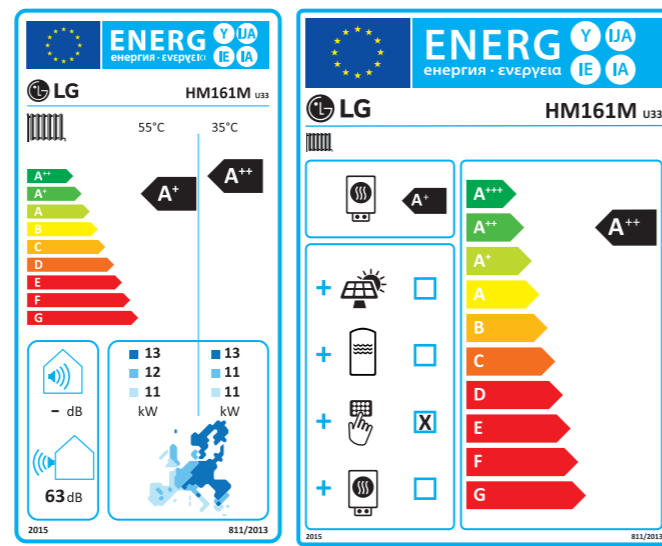
- New Interface
- LG Wi-Fi Solution(Smart ThnQ)
- 2nd Heating Circuit
- Various Temperature Control Options

Easy Installation & Maintenance

- All In One Concept (No Refrigerant Piping Work)
- Easy Commissioning by PC Tool (LG Heating Configurator)

Note
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ENERGY LABELING



* 16kW 1Φ model

MONOBLOC CONCEPT

THERMA V Monobloc is a fully packaged piece of equipment, where the indoor and outdoor unit are combined as one module. Therefore, there is no need for refrigerant piping work since Monobloc unit located outside is connected by only water piping. Further, additional water side items such as PHE, Expansion Tank, Water Pump are included in the package.



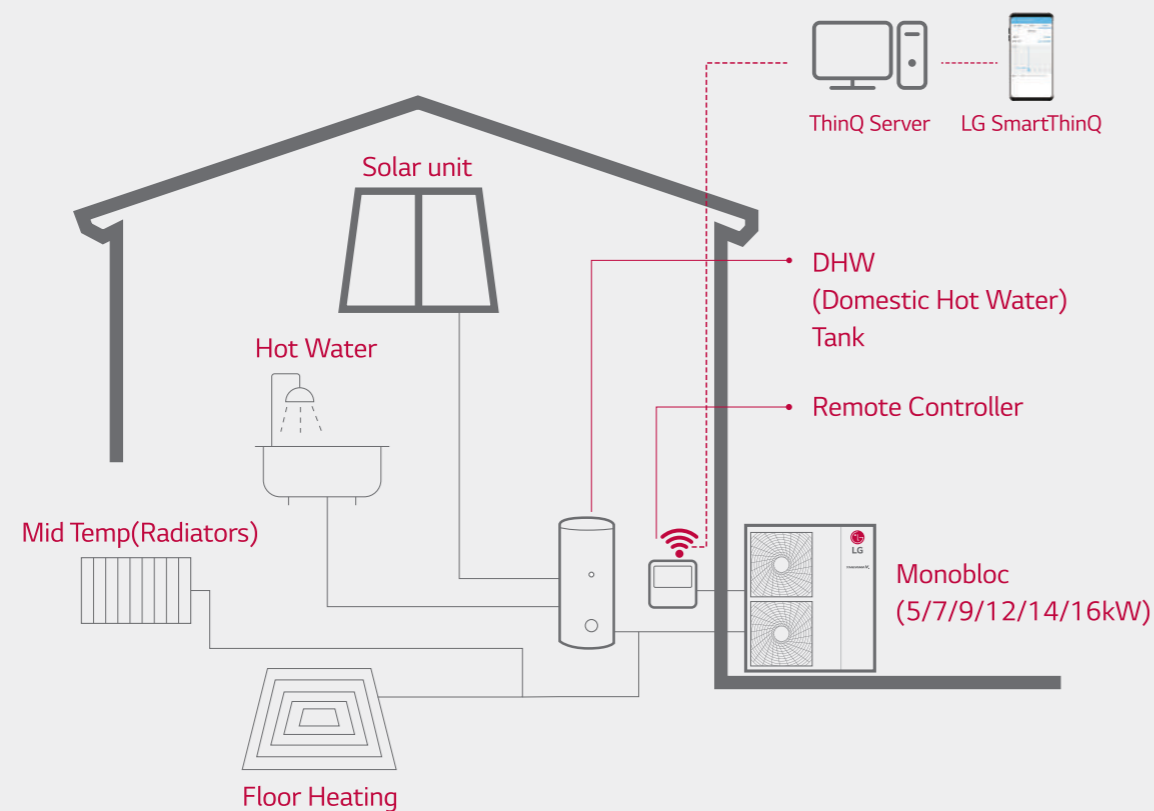
LINE UP

Capacity (kW)	Phase	5	7	9	12	14	16
THERMA V Monobloc	1Φ	 HM051M.U43	 HM071M.U43	 HM091M.U43	 HM121M.U33	 HM141M.U33	 HM161M.U33
	3Φ				 HM123M.U33	 HM143M.U33	 HM163M.U33

LG Heating solution for the future buildings

Our heating products provide a greener and more energy efficient heating solution for your home and office through continuous research and development of green energy technologies such as R32 refrigerant AWHP and revolutionary scroll compressor.

LG's residential heating solution (Therma V) can cover space heating and Hot water demand of house at the same time. Compared to conventional boiler system, it is more efficient and reduces CO2 emission as it uses renewable energy from the outside air. Furthermore, these environmental friendly solutions can be connected with various smart control solutions such as ThinQ.



THERMA V™
(air to water heat pump)

LG's control system provides a variety of solutions that save operational costs and deliver efficient energy control. Standard III Remote Controller with relevant accessories offers not only simple interface to make it easier to control but also diverse information and management function.

- LG Mobile App. Control (ThinQ)
- Operation schedule
- Error Check

- 4.3" Color Display
- Easy interface
- Multi Language

- Interface for 3rd party thermostat
- On/Off and operation mode control
- Operation and error status monitor

Individual Control

- Annual operation schedule
- Operation history
- Easy commissioning

- Power consumption check
- Produced heat energy check
- Yearly trend



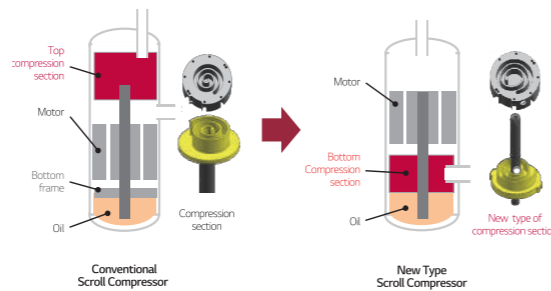
Excellent Performance

REVOLUTIONARY COMPRESSOR

The New Type Scroll Compressor is applied for high-efficiency and reliability. This type of compressor is more advanced compressor compared to the conventional scroll compressor, especially tilting motion of scroll has been improved. Further, compressor operation range is improved compared to previous model.

Revolutionary Scroll Compressor

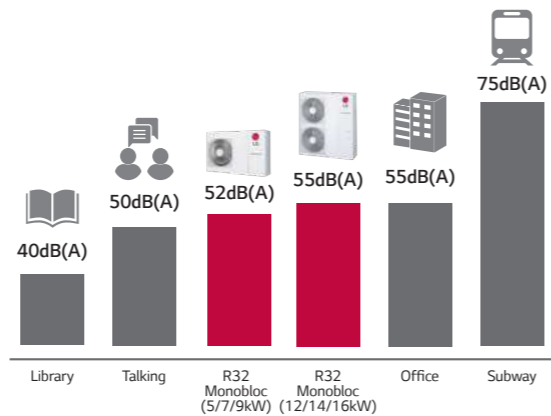
- Scroll compressor with simple structure
- High efficiency (low load at low speed / total efficiency)
- Low noise (high speed possible)
- Improved Tilting Motion of scroll
- 20% weight reduction (vs. conventional compressor)



REDUCED NOISE LEVEL

The R32 Monobloc reduces noise level compared to previous models.

Sound Pressure Level Comparison

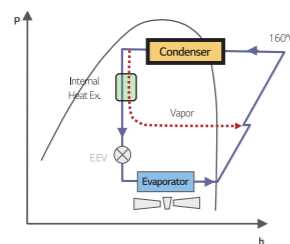


FLASH GAS INJECTION

In case of R32 Refrigerant, it is very important to control discharge temperature of compressor properly. In the R32 Monobloc, Flash Gas Injection technology is applied to control discharge temperature of compressor efficiently. As a result of this technology, heating operation range is expanded and heating performance at low ambient temperature is enhanced.

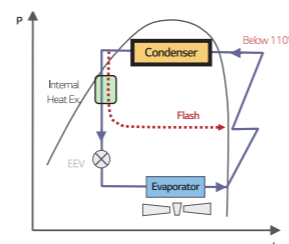
Vapor Injection

- Discharge Temperature of Compressor is very high (160 °C)
- Failure of Injection Cycle and compressor operation under protection logic



Flash Gas Injection

- Discharge Temperature of Compressor is below 110 °C
- Good Operation of Injection Cycle



VARIOUS TEMPERATURE CONTROL OPTIONS

Various Temperature Control Options are possible for the User's comfort and convenience. Especially for European life style where thermal comfort is preferred, Simultaneous Control of Room Air and Water Temp. function is added.

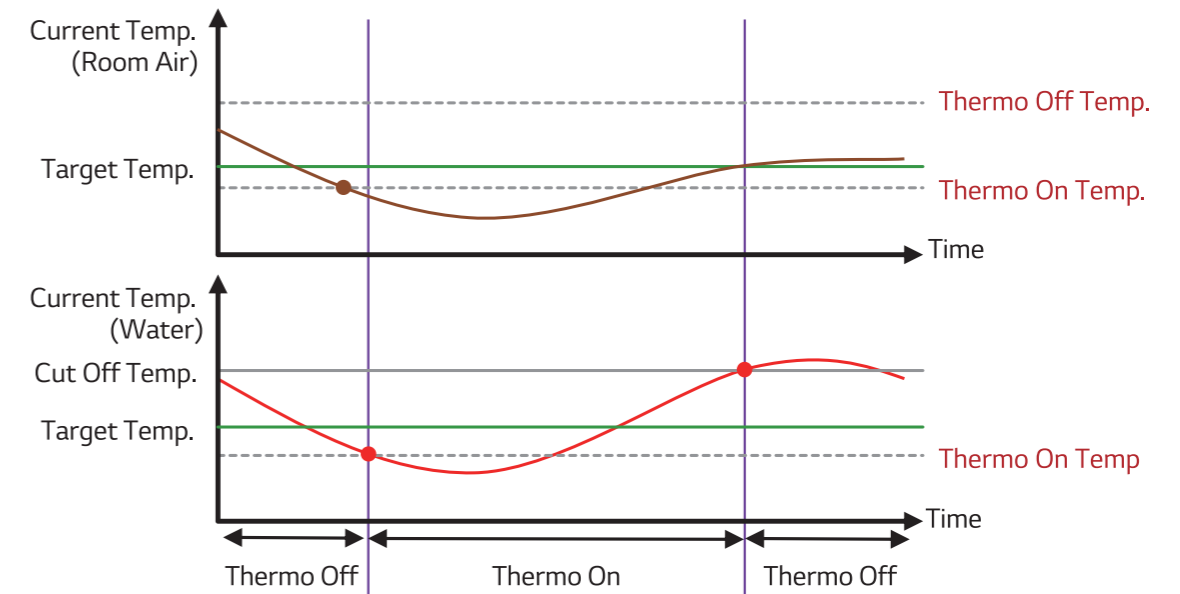
① Control of Leaving Water Temperature

② Control of Entering Water Temperature

③ Control of Room Air Temperature

④ Simultaneous Control of Room Air and Water Temp.

- Thermo On : When Satisfied both Room Air Temp. Condition and Water Temp. Condition
- Thermo Off : When Satisfied Room Air Temp. Condition or Water Temp. Condition



WIDE OPERATION RANGE

Due to the LWT up to 65 °C, Mid Temperature Radiator range can be fully covered. As a result, R32 Monobloc has high competitiveness for replacement case as well as new case.



User Convenience

NEW REMOTE CONTROLLER

The R32 Monobloc system is upgraded with new standard remote controller.

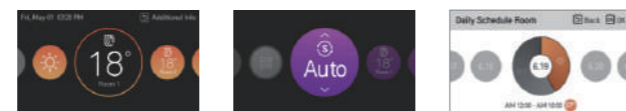


Premium Design

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

Intuitive Interface

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



More energy contents

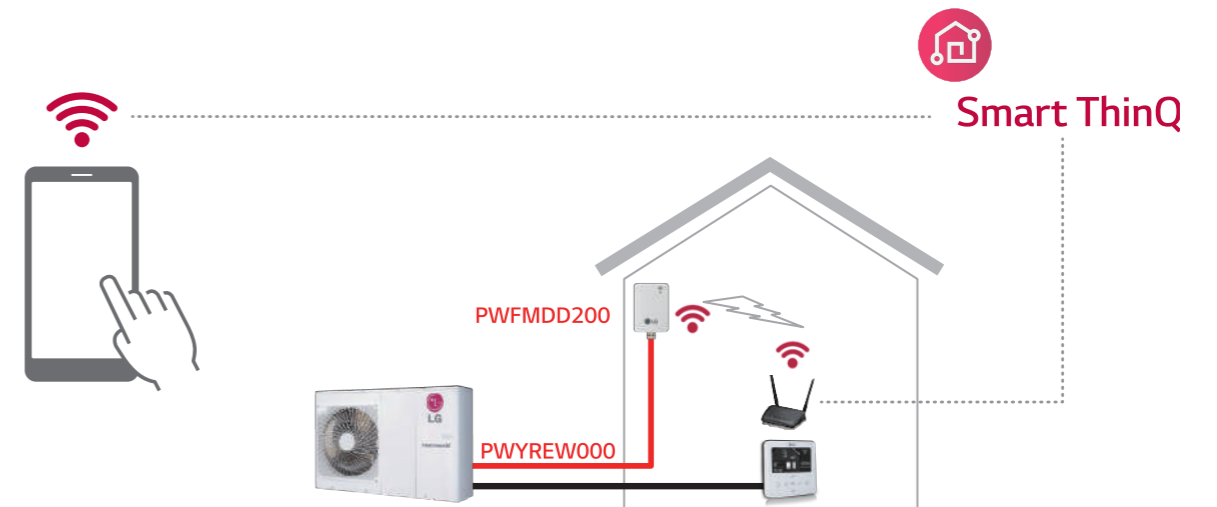
Auto controlled by weather and time

Convenient Functions

Optimize schedule setting logic
• Set the period, date, on/off time, operation mode, target temp.
Easy installation setting (as-is : numeric code , to-be : word)

LG WI-FI SOLUTION

Access your THERMA V anytime from anywhere



※ Search "LG Smart ThinQ" on Google market or App store then download the app.

Simple operation for various functions

- On/Off
- Operation Mode Selection
- Current temperature
- Set temperature
- On/Off Reservation
- Energy Monitoring

Mandatory Accessory: PWFMD200(LG Wi-Fi Modem) and PWYREW000 (10m extension connect cable in between THERMA V and Wi-Fi module)





Easy Installation & Maintenance

EASY INSTALLATION

All-in-one Concept

- LG provides fully packaged THERMA V Monobloc that additional water side components are included in the package.
- No need to work refrigerant piping, easier and quicker installation.



THERMA V R32 Monobloc

Water side Items included in the Monobloc



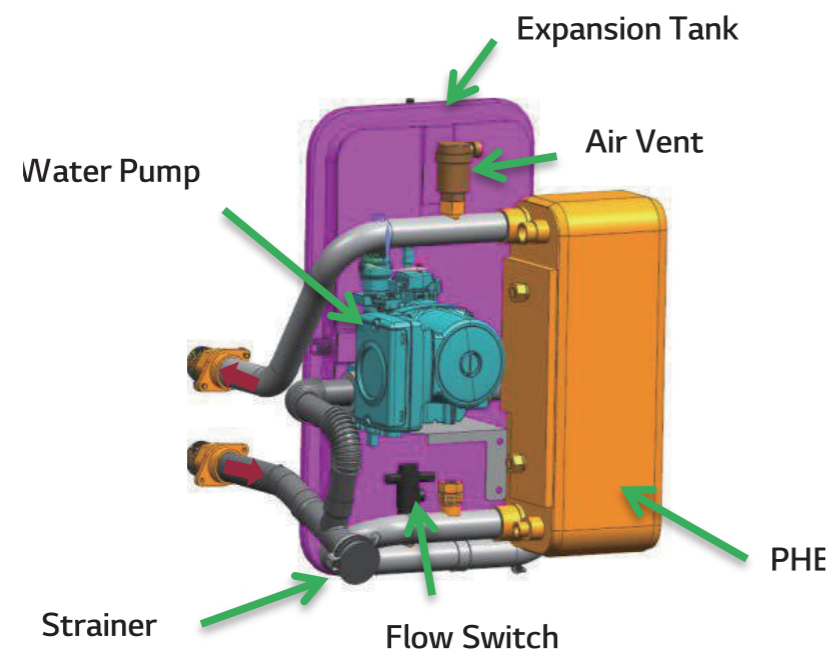
PHE
(Plate Heat Exchanger)



Expansion Tank



A-Class Water Pump



EASY COMMISSIONING

Pre-Installation Setting

- Based on installation site information, installers can prepare presetting with LG Heating Configurator and save data into memory card from office.
- At the site, then installers can simply insert memory card at the back of remote controller to activate configuration data.



EASY & QUICK MAINTENANCE

Data Logging

- The remote controller can store up to 50 history items, making it possible to easily identify cause of malfunctioning or faults using the history data and prompt solution



- Date and time
- Operation mode (Cooling, Heating, Hot Water, Auto)
- Setting temperature
- Inlet / Outlet temperature
- Room air temperature
- DHW (Operation status / Target temperature / current temperature)
- ODU operation status
- Error status & code

MONOBLOC

HM051M.U43
HM071M.U43
HM091M.U43



Seasonal Energy

Description		Unit	HM051M.U43	HM071M.U43	HM091M.U43	
Space Heating (According to EN14825)	Average Climate water outlet 35°C	SCOP		4.45	4.45	4.45
		Rated heat output (Prated)		6	6	6
		Seasonal space heating efficiency (ηs)	%	175	175	175
		Seasonal space heating eff. Class		A+++ ¹⁾	A+++ ¹⁾	A+++ ¹⁾
		Annual energy consumption	kWh	2,551	2,668	2,784
	Average Climate water outlet 55°C	SCOP		3.12	3.12	3.12
		Rated heat output (Prated)		6	6	6
		Seasonal space heating efficiency (ηs)	%	122	122	122
		Seasonal space heating eff. Class		A+	A+	A+
		Annual energy consumption	kWh	3,638	3,638	3,638

Note

1. A+++ label is available from 26, Sep. 2019 and should be considered as A++ label until that time.

Product Specification

Description		Unit	HM051M.U43	HM071M.U43	HM091M.U43	
Nominal Capacity	Heating	LWT 35°C at OAT 7°C	kW	5.50	7.00	9.00
		LWT 55°C at OAT 7°C	kW	5.50	5.50	5.50
		LWT 35°C at OAT 2°C	kW	3.30	4.20	5.40
	Cooling	LWT 18°C at OAT 35°C	kW	5.50	7.00	9.00
LWT 7°C at OAT 35°C		kW	5.50	7.00	9.00	
Nominal Power Input	Heating	LWT 35°C at OAT 7°C	kW	1.22	1.56	2.15
		LWT 55°C at OAT 7°C	kW	2.04	2.04	2.04
		LWT 35°C at OAT 2°C	kW	0.94	1.20	1.54
	Cooling	LWT 18°C at OAT 35°C	kW	1.20	1.56	2.14
LWT 7°C at OAT 35°C		kW	1.96	2.59	3.46	
COP	Heating	LWT 35°C at OAT 7°C		4.50	4.50	4.18
		LWT 55°C at OAT 7°C		2.70	2.70	2.70
		LWT 35°C at OAT 2°C		3.52	3.51	3.50
EER	Cooling	LWT 18°C at OAT 35°C		4.60	4.50	4.20
		LWT 7°C at OAT 35°C		2.80	2.70	2.60
Operation range	Heating	Water Side (LWT)	°C	15 ~ 65		
		Air Side	°C	-25 ~ 35		
	Cooling	Water Side (LWT)	°C	5 ~ 27		
		Air Side	°C	5 ~ 48		
Domestic Hot Water	Water Side (LWT)	°C	15 ~ 80			
Refrigerant	Type		R32			
	GWP (Global Warming Potential)		675			
	Charge	kg	1.4			
TCO2eq		0.95				
Compressor	Quantity	EA	1			
	Type		Scroll			
Water Flow Rate	Rated	LPM	14.4	20.1	25.9	
Piping Connections	Water Circuit	Inlet	mm (in)	Male PT 25(1)		
		Outlet	mm (in)	Male PT 25(1)		
Dimensions	Unit	W x H x D	mm	1,239 x 907 x 404		
Net Weight	Unit		kg	96		
Sound power level	Heating	Rated	dBA	60		
Power supply	Phase / Frequency / Voltage		Φ / Hz / V	1 / 50 / 220-240		
	Maximum Running Current		A	23		

Note

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2. Wiring cable size must comply with the applicable local and national codes. And "Electric characteristics" chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.
3. Sound Level Values are measured at Noise Measuring chamber accordance with standard. Therefore, these values depend on the ambient conditions and values are normally higher in actual operation.
4. Performances are accordance with EN14511.
5. This product contains Fluorinated greenhouse gases.
6. LWT : Leaving Water Temperature, OAT : Outdoor Air Temperature

MONOBLOC

HM121M.U33 HM123M.U33
 HM141M.U33 HM143M.U33
 HM161M.U33 HM163M.U33



Seasonal Energy

Description			Unit	HM121M.U33 HM123M.U33	HM141M.U33 HM143M.U33	HM161M.U33 HM163M.U33
Space Heating (According to EN14825)	Average Climate water outlet 35°C	SCOP		4.45	4.45	4.45
		Rated heat output (Prated)		10	11	11
		Seasonal space heating efficiency (ηs)	%	175	175	175
		Seasonal space heating eff. Class		A+++ ¹⁾	A+++ ¹⁾	A+++ ¹⁾
		Annual energy consumption	kWh	4,642	4,875	5,103
	Average Climate water outlet 55°C	SCOP		3.18	3.18	3.18
		Rated heat output (Prated)		12	12	12
		Seasonal space heating efficiency (ηs)	%	124	124	124
		Seasonal space heating eff. Class		A+	A+	A+
		Annual energy consumption	kWh	7,795	7,795	7,795

Note

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Product Specification

Description			Unit	HM121M.U33	HM141M.U33	HM161M.U33
Nominal Capacity	Heating	LWT 35°C at OAT 7°C	kW	12.00	14.00	16.00
		LWT 55°C at OAT 7°C	kW	12.00	12.00	12.00
		LWT 35°C at OAT 2°C	kW	11.00	12.00	13.80
	Cooling	LWT 18°C at OAT 35°C	kW	14.00	14.00	16.00
LWT 7°C at OAT 35°C		kW	14.00	14.00	16.00	
Nominal Power Input	Heating	LWT 35°C at OAT 7°C	kW	2.61	3.11	4.00
		LWT 55°C at OAT 7°C	kW	4.29	4.29	4.29
		LWT 35°C at OAT 2°C	kW	3.13	3.42	3.94
	Cooling	LWT 18°C at OAT 35°C	kW	3.04	3.26	4.00
LWT 7°C at OAT 35°C		kW	5.19	5.38	6.40	
COP	Heating	LWT 35°C at OAT 7°C		4.60	4.50	4.00
		LWT 55°C at OAT 7°C		2.80	2.80	2.80
		LWT 35°C at OAT 2°C		3.52	3.51	3.50
EER	Cooling	LWT 18°C at OAT 35°C		4.60	4.30	4.00
		LWT 7°C at OAT 35°C		2.70	2.60	2.50
Operation range	Heating	Water Side (LWT)	°C	15 - 65		
		Air Side	°C	-25 - 35		
	Cooling	Water Side (LWT)	°C	5 - 27		
		Air Side	°C	5 - 48		
Domestic Hot Water	Water Side (LWT)	°C	15 - 80			
Refrigerant	Type			R32		
	GWP (Global Warming Potential)			675		
	Charge		kg	2.4		
		TCO2eq		1.62		
Compressor	Quantity		EA	1		
	Type			Scroll		
Water Flow Rate	Rated		LPM	34.5	40.3	46.0
Piping Connections	Water Circuit	Inlet	mm (in)	Male PT 25(1)		
		Outlet	mm (in)	Male PT 25(1)		
Dimensions	Unit	W x H x D	mm	1,239 x 1,450 x 404		
Net Weight	Unit		kg	130		
Sound power level	Heating	Rated	dBA	63		
Power supply	Phase / Frequency / Voltage		Φ / Hz / V	1 / 50 / 220-240		
	Maximum Running Current		A	35		

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3. Sound Level Values are measured at Noise Measuring chamber accordance with standard. Therefore, these values depend on the ambient conditions and values are normally higher in actual operation.
4. Performances are accordance with EN14511.
5. This product contains Fluorinated greenhouse gases.
6. LWT : Leaving Water Temperature, OAT : Outdoor Air Temperature

Product Specification

Description		Unit	HM123M.U33	HM143M.U33	HM163M.U33	
Nominal Capacity	Heating	LWT 35°C at OAT 7°C	kW	12.00	14.00	16.00
		LWT 55°C at OAT 7°C	kW	12.00	12.00	12.00
		LWT 35°C at OAT 2°C	kW	11.00	12.00	13.80
	Cooling	LWT 18°C at OAT 35°C	kW	14.00	14.00	16.00
		LWT 7°C at OAT 35°C	kW	14.00	14.00	16.00
Nominal Power Input	Heating	LWT 35°C at OAT 7°C	kW	2.61	3.11	4.00
		LWT 55°C at OAT 7°C	kW	4.29	4.29	4.29
		LWT 35°C at OAT 2°C	kW	3.13	3.42	3.94
	Cooling	LWT 18°C at OAT 35°C	kW	3.04	3.26	4.00
		LWT 7°C at OAT 35°C	kW	5.19	5.38	6.40
COP	Heating	LWT 35°C at OAT 7°C		4.60	4.50	4.00
		LWT 55°C at OAT 7°C		2.80	2.80	2.80
		LWT 35°C at OAT 2°C		3.52	3.51	3.50
EER	Cooling	LWT 18°C at OAT 35°C		4.60	4.30	4.00
		LWT 7°C at OAT 35°C		2.70	2.60	2.50
Operation range	Heating	Water Side (LWT)	°C	15 - 65		
		Air Side	°C	-25 - 35		
	Cooling	Water Side (LWT)	°C	5 - 27		
		Air Side	°C	5 - 48		
Domestic Hot Water	Water Side (LWT)	°C	15 - 80			
Refrigerant	Type			R32		
	GWP (Global Warming Potential)			675		
	Charge		kg	2.4		
		TCO2eq	1.62			
Compressor	Quantity	EA	1			
	Type		Scroll			
Water Flow Rate	Rated	LPM	34.5	40.3	46.0	
Piping Connections	Water Circuit	Inlet	mm (in)	Male PT 25(1)		
		Outlet	mm (in)	Male PT 25(1)		
Dimensions	Unit	W x H x D	mm	1,239 x 1,450 x 404		
Net Weight	Unit		kg	130		
Sound power level	Heating	Rated	dB(A)	63		
Power supply	Phase / Frequency / Voltage		Φ / Hz / V	3 / 50 / 380-415		
	Maximum Running Current		A	15		

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6. LWT : Leaving Water Temperature, OAT : Outdoor Air Temperature

ELECTRIC BACK UP HEATER

HA031M.E1
HA061M.E1



Product Specification

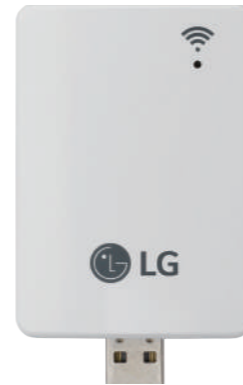
Electrical Specification		HM031M.E1	HA061M.E1
Backup Heater	Type		Sheath
	Number of Heating Coil	EA	1
	Capacity Combination	kW	3.0
	Operation		Automatic
	Heating Steps	Step	1
	Power Supply	V, Φ, Hz	220-240, 1, 50
	Maximum Current	A	12.0
Wiring Connections	Power Cable (included Earth, H07RN-F)	No. x mm2	3 x 1.5
	Communication Cable (H07RN-F)	No. x mm2	4 x 0.75

LG Wi-Fi MODEM

PWFMDD200.ENCXLEU

Access LG THERMA V anytime and from anywhere with Wi-Fi equipped device
 LG's exclusive Home Appliances control app (Smart ThinQ) is available
 Simple operation for various functions

- On/Off
- Operation Mode Selection
- Current Temperature
- Set Temperature
- On/Off Reservation
- Energy Monitoring



Model Name	PWFMDD200
Size (mm)	46 x 68 x 14
Interfaceable Products	THERMA V Split & Monobloc
Connection Type	Indoor Unit 1:1
Communication Frequency	2.4GHz
Wireless Standards	IEEE 802.11b/g/n
Mobile Application	LG Smart ThinQ (Android v4.1 (Jellybean) or higher, iPhone iOS 9.0 or higher)
Optional Extension Cable	PWYREW000 (10m extension)

- * Functionality may be different according to each Indoor model (Split and Monobloc available)
- * User interface of application shall be revised for its design and contents improvement
- * Application is optimized for smartphone use, so it may not be well functioning with tablet devices.
 - 1) Vane Control may not be possible according to the type of indoor unit
 - 2) For the compatibility with indoor unit, please contact regional office

DOMESTIC HOT WATER TANK









OSHW-200FAEU
 OSHW-300FAEU
 OSHW-500FAEU
 OSHW-300FDAEU




















DOMESTIC HOT WATER TANK		OSHW-200F	OSHW-300F	OSHW-500F	OSHW-300FD	
General Characteristics	Water Volume	L	200	300	500	300
	Diameter	mm	640	640	810	640
	Height	mm	1,350	1,850	1,900	1,350
	Empty Weight	Kg	61	100	146	106
	Tank Materials		F18 STEEL	F18 STEEL	F18 STEEL	F18 STEEL
	Color		Grey	Grey	Grey	Grey
Characteristics of Electrical Back-up	Additional Electric Heater	W	2,400	2,400	2,400	2,400
	Power Supply	Φ/ V / Hz	1/ 230W / 50- 60Hz	1/ 230W / 50- 60Hz	1/ 230W / 50- 60Hz	1/ 230W / 50- 60Hz
	Adjustable Thermostat	°C	0-90	0-90	0-90	0-90
Characteristics of Exchanger	Exchanger Type		Single	Single	Single	Double
	Material Exchanger		F18 STEEL	F18 STEEL	F18 STEEL	F18 STEEL
	Maximum Water Temp	°C	90	90	90	90
	Coil Surface	mm	2.3	3.1	4.8	3.1/0.97
Hydraulic Connections - Heat Pump	Inlet	mm	1"	1"	1 1/4"	1" (Sup 3/4")
	Outlet	mm	1"	1"	1 1/4"	1" (Sup 3/4")
Hydraulic Connections - Domestic Hot Water Tank	Domestic hot water inlet	mm	3/4"	3/4"	1"	3/4"
	Domestic hot water outlet	mm	3/4"	1"	1"	1"
Energy Efficiency Class			B	B	B	B
Standing Heat Loss	W		61	70	83	70

Mandatory Optional Accessories				
Domestic Hot Water Tank Installation Kit	PHLTB	PHLTB	PHLTB	PHLTB
Optional Accessories				
Mixing Valve (3/4" dn20)	OSHA-MV	OSHA-MV	OSHA-MV	OSHA-MV
Mixing Valve (1" dn25)	OSHA-MV1	OSHA-MV1	OSHA-MV1	OSHA-MV1
3-Way Valve	OSHA-3V	OSHA-3V	OSHA-3V	OSHA-3V

ACCESSORIES PROVIDED BY LG

Accessory	Feature
Domestic Hot Water Tank	 <ul style="list-style-type: none"> OSHW-200F 200 LITRES OSHW-300F 300 LITRES OSHW-500F 500 LITRES <p>Single Coil</p>  <ul style="list-style-type: none"> OSHW-300FD 300 LITRES <p>Double Coil</p>  <ul style="list-style-type: none"> OSHA-3V <p>3-Way Valve</p>  <ul style="list-style-type: none"> OSHA-MV OSHA-MV1 <p>Mixing Valve</p>
Domestic Hot Water Tank Kit	<ul style="list-style-type: none"> • PHLTB (Monobloc) <p>Features Easy to install the domestic hot water for monobloc. There is a MCCB to protect the product. Dimension (mm) (H x W x D) : 250 x 170 x 110 Weight (kg) : 2.1</p> <p>To extend THERMA V functionality in generating domestic hot water.</p> <p>* The sensor (PHRSTAO) can be purchased separately in case of using other brand's Domestic tank.</p>  <p>PHLTB</p>
Remote Temperature Sensor	<ul style="list-style-type: none"> • PQRSTAO <p>Features It can help to detect the exact room temperature. Applied to ceiling cassette, ceiling concealed duct, AWHP and Hydro Kit.</p> <p>Parts Included Remote temperature sensor / Extension cable (15m) / Manual</p> 
Solar Thermal Kit	<ul style="list-style-type: none"> • PHLLA <p>Features To interface solar-thermal system with THERMA V and double coil Domestic tank. Installed at the water pipe, between Domestic tank and solar-thermal system. Dimension (mm) (H x W x D) : 110 x 55 x 22</p> 
Dry Contact	<ul style="list-style-type: none"> • PDRYCB000 / PDRYCB300 <p>Features For connection with boiler (Bivalent scene)</p> 

RECOMMENDED OPTIONAL ACCESSORIES

No.	Accessory	Picture	Purpose	Specification
1	Domestic Hot Water Tank		Store and provide hot water for sanitation	Volume : 200 • 400 l Enamel or stainless-steel tank / Insulating foam (e.g. PUR • polyurethane) heat-exchanger surface ≥ 3 m ²
2	3-Way-Valve		Switch between heating and domestic hot water circuit	230V AC SPDT (Single Pole Double Throw) / opening time 30 • 90 sec / final position switch Internal leakage rate < 0,1%
3	Electrical Tank Heater		Supports heating of domestic hot water, when heat pump is blocked or capacity is limited	2 • 6 kW Connector dimension suitable for DHW tank
4	Buffer Tank		Prevents cycling, when water volume is low and /or heating demand is low, secures enough heat for defrosting cycle	Insulating foam (e.g. PUR • polyurethane) Volume : 100 • 200 l (Installation in series with heat pump) 500 - 1,000 l (Installation in parallel with heat pump)
5	Bypass Valve		Ensures minimum water flow rate, when flow through heating circuits is limited due to closed valves	Dimensioning according manufacturer adjustable opening pressure
6	2-Way-Valve		Blocks heating circuits, that are not suitable for cooling during cooling operation	230V AC NO or NC type final position switch
7	Expansion Vessel		Absorption of pressure differences in the heating circuits due to temperature increase / decrease of the water	Dimensioning on-site required
8	Strainer		Protects plate-heat-exchanger from blocking particles	1 inch / 25.4mm, Mesh size ~ 1 x 1 mm for HM03M1.U42 only (other models are included)
9	Heating Cable		Prevents the condensate pan and the drainage pipe from icing	Thermostatic control depending on outdoor temperature All models do have electric heating cable for prevent frost from condensing water at the condensing pan except 3kW capacity.
10	Antifreeze		Prevents the heating water from freezing, when heat pump is out of order	Monoethyleneglycole Concentration according to lowest possible outdoor temperature
11	Noise Damper		Prevents that structure-born noise is transported via the water piping	EPDM; Operating temperature according climate region (at least -10 - + 90°C)
12	Anti-Noise Sockets		Prevents that structure-born noise is transported to the base or to the brackets	Dimensioning on-site required
13	Thermostat		When thermostatic room temperature control is preferred by customer	230V AC When heat pumps operates in heating and cooling mode : thermostat with mode selection
14	Refrigerant Tubes		Pre-fabricated double-pipe to connect split indoor and outdoor unit	Diameter : Please refer to Specification
15	Water Tubes		Pre-fabricated double-pipe to connect monobloc outdoor unit with heating system	When heat pump is used for cooling : diffusion-resistant tubes
16	Bushing Sleeve		Protecting the building against pressing water coming through the duct of the heating tubes	Dimensioning on-site required
17	Insulation Material		Mandatory when heat pump is used for cooling; prevents condensate water on cold pipes and assemblies	Diffusion-resistant

