MINI-FSV-Asia-2017

Panasonic
BUSINESS






FSV Flexi System VRF INVERTER

2017

2-Way Mini-FSV LE Series 4/5/6/8/10 HP

For Commercial & Residential Use

NEW

Building Passion,
Building Solutions.
Panasonic Air Conditioning Systems

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Building Solutions.
Panasonic Air Conditioning Systems

⚠ Do not add or replace refrigerant other than the specified type. Manufacturer is not responsible for the damage and deterioration in safety due to usage of other refrigerant.

Panasonic®

MINI GAME CHANGER

Mini-FSV with Extraordinary Energy-Saving Performance
and High External Static Pressure (35Pa)

Extraordinary EER

4.20 [LE 1] for Asia model/8HP / **5.08** [LE 2] for Asia model/4HP

Advantages of Mini FSV LE Series used for medium sized buildings

Installation

Improvements including compact outdoor unit design, long piping and high pressure of 35Pa allow easier installation of units in condominiums and medium sized buildings with limited spaces.

Energy Control

The use of R410 refrigerant, the inverter compressor, and the design of the outdoor unit fan and heat exchanger contributes to high efficiency resulting to lower energy consumption.

Reliability

Panasonic air conditioners are built to operate in wide temperature range (-20 to 46°C). Using the Blue Fin treatment and condenser, outdoor units are also durable against harsh environments like rain and sea breeze.

LE1 Series 8/10 HP

Cooling & Heating Type

- High external static pressure 35Pa
- Wide operation range: Cooling: -10°C to 46°C DB, Heating at: -20°C to 18°C WB
- Maximum number of connectable indoor units : 13 (Depending on the condition, main tube may need 1 size up)
- Diversity ratio 50-130%
- DC inverter technology combined with R410A for excellent efficiency
- Actual piping length: 150m (Total piping length: 300m)
- System difference of elevation: 50m/40m (outdoor above/below)
- Difference in elevation between indoor units: 15m
- Demand response (Peak cut) by optional parts.
- One ampere starting current
- Full range of indoor units and control options
- Auto restart from outdoor unit
- Hi-durability outdoor unit model is available.
- Suitable for R22 renewal projects RENEWAL R22

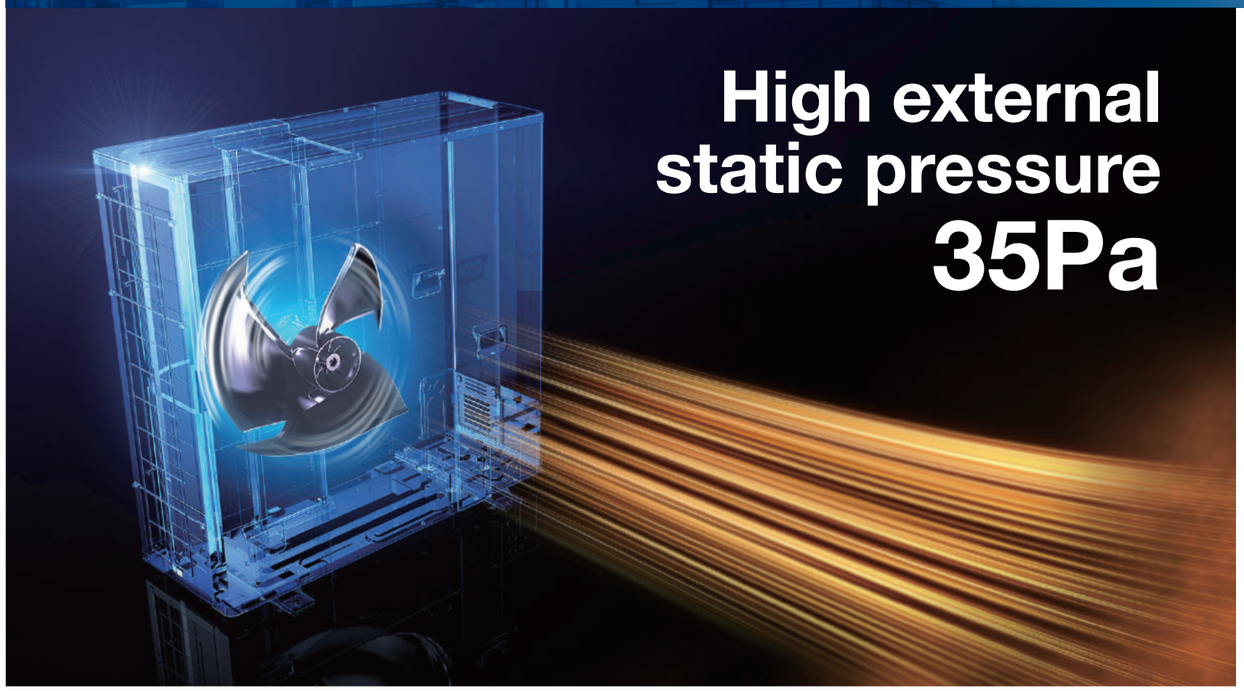
LE2 Series 4/5/6 HP

Cooling & Heating Type

NEW

- High external static pressure 35Pa
- Wide operation range: Cooling: -10°C to 46°C DB, Heating at: -20°C to 18°C WB
- Refrigerant chargeless up to 50m
- Extraordinary energy saving: 5.08* EER for 4HP model
- Demand response (Peak cut) by optional parts.
- Maximum number of connectable indoor units : 9*
- Diversity ratio 50-130%
- DC inverter technology combined with R410A for excellent efficiency
- Demand response (Peak cut) by optional parts.
- One ampere starting current
- Full range of indoor units and control options
- Auto restart from outdoor unit
- Hi-durability outdoor unit model is available.
- Suitable for R22 renewal projects RENEWAL R22

* 6 HP only; 4 HP for 7 units, 5 HP for 8 units.



High external static pressure 35Pa

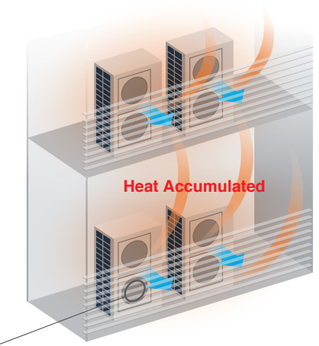
High external static pressure 35Pa

LE 1 LE 2

When unit is installed on a narrow balcony and exposed to the sun, the fence at the front side would restrict hot air from being discharged. Heat accumulated in an enclosure can cause over-heating. This could potentially result in damage or shorten the product's life span. A high external static pressure sends the air further away from the outdoor unit and through the fence. This provides better air circulation and distribution.

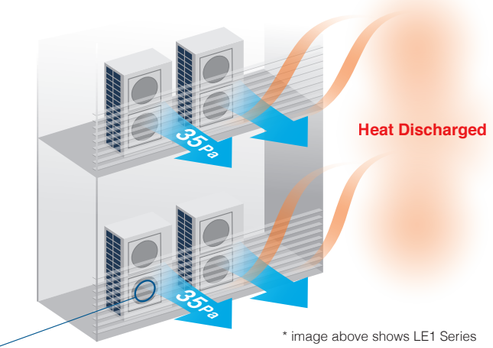
Previous Model - Low Pressure

When the pressure is low, hot air will accumulate in the unit thus affecting its work performance and of the unit above it as well.



LE Series - High Pressure

But with a high pressure of 35Pa, hot air is sent further away preventing overheating inside the outdoor unit enclosure.



* image above shows LE1 Series

Previous Fan

High electrostatic pressure disrupted the airflow of the previous fan, lowering the air pressure and preventing hot air from being discharged far enough.

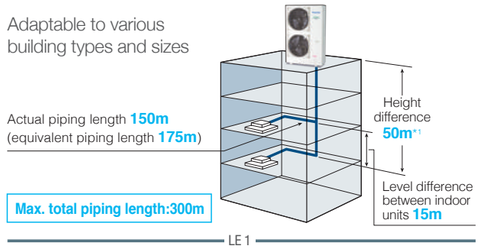
LE Series Fan

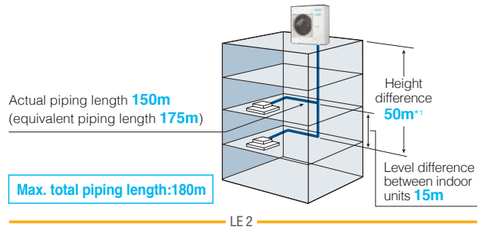
The new LE Series fan has ribs extending near the blade tips, in a structure that resists deformation. During high electrostatic pressure, this blade shape suppresses disruptions in the airflow, and a high air pressure of 35 Pa discharges the hot air a sufficient distance.

Long piping design length for greater design flexibility

LE 1 LE 2

Adaptable to various building types and sizes





*1: 40m if the outdoor unit is below the indoor unit.

Refrigerant chargeless up to 50m

LE 2

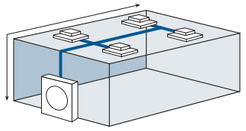
Up to 50m of piping without additional gas charging makes installation flexible, easy and hassle-free.

A 50m pipe length is sufficient for most residential and small business buildings. When total piping length exceeds 50m, additional refrigerant charge is required.

Chargeless
Max. total piping length: 50m

Charge
Max. total piping length: 180m
(Actual length: 150m)

[Sample piping lay-out]



Compact design

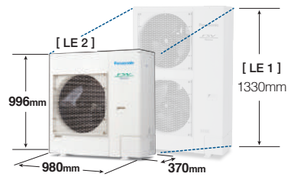
LE 1 LE 2

Also, since Mini VRF LE Series is a single unit, it is possible to install the unit in more various places compared to the Single Split system.

Short height of 996m

LE 2

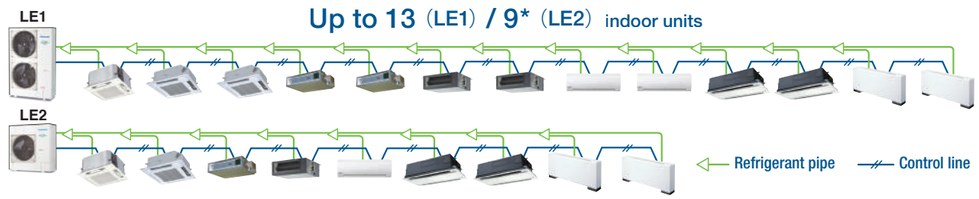
In addition to raising efficiency, we have made the outdoor unit more compact. It can now be installed in places that were previously too small.



Up to 13 indoor units connectable

LE 1 LE 2

An expansion from Panasonic VRF line up, the mini FSV is compatible with the same indoor units and controls as the rest of the FSV range.



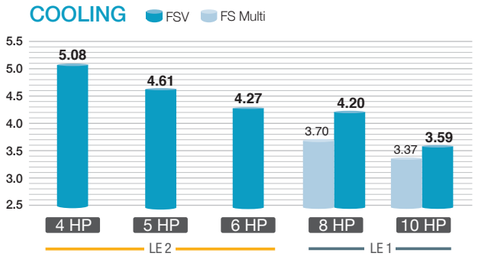
* Use any of the 22 type indoor models. Depending on the size or type of indoor unit, tubing size shall be changed. Please refer manuals for details.
* Diversity ration 50-130%
* 6 HP only; 4 HP for 7 units, 5 HP for 8 units.

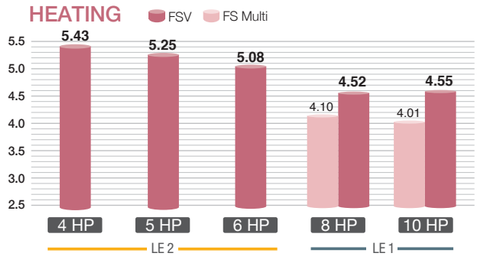
Energy Control

High efficiency

LE 1 LE 2

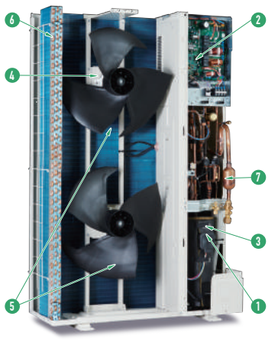
The operation efficiency has been improved using highly efficient R410A refrigerant, a DC Inverter compressor, DC motor and a heat exchanger design.





Energy savings design

LE 1 LE 2



1 Panasonic Inverter Compressor	A large-capacity inverter compressor has been adopted. The inverter compressor is superior in performance with improved partial-load capacity.
2 Printed Circuit Board	The number of PCB is 2 pieces for making maintenance easier.
3 Accumulator	A large accumulator has been adopted to maintain compressor reliability because of the increased refrigerant quantity, which allows an extended max piping length.
4 DC Fan Motor	Checking load and outside temperature, the DC motor is controlled for optimum air volume.
5 Newly Designed Fan	The newly designed fan blades have been developed to inhibit air turbulence and to increase efficiency. As fan diameter has been increased its size, the air volume has been increased whilst maintaining a same sound level.
6 Heat Exchanger & Copper Tubes	The heat exchanger size and the copper tube sizes in the heat exchanger have been redesigned to increase efficiency.
7 Oil Separator	A centrifugal separator has been adopted to improve oil separation efficiency and reduce refrigerant pressure loss.

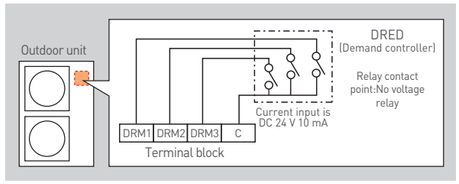
Flexible demand response with the optional terminal block

LE 1 LE 2

Demand response

Featuring inverter control technology, all Panasonic Mini FSV systems are Demand Response Management (DRM) ready. With this control, power consumption at times of peak load can be set in three steps to deliver optimum performance. This helps to reduce annual power consumption with minimal loss in comfort.

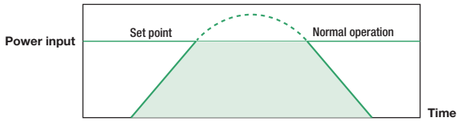
*Terminal block parts to be supplied separately. Please ask your dealer.



Flexible demand response with the CZ-CAPDC2*1

Setting is possible as 0% or in the range from 40 to 100% (in steps of 5%). At the time of shipping, setting has been done to the three steps of 0%, 70% and 100%.

*1 An outdoor Seri-Para I/O unit (CZ-CAPDC2) is required for demand input signal.
* Demand timer setting for high spec remote controller is available.



	Power input	
Level 1	100% (Preset)	Possible to change 40-100%
Level 2	70% (Preset)	
Level 3	0% (Always in stop condition)	

Reliability

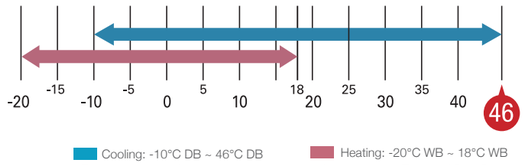
Wide operating range

LE 1 LE 2

- Cooling operation is possible even when outdoor temperature is as low as -10°C DB.
- Cooling operation is possible even when outdoor temperature is as high as 46°C DB.
- Heating operation is possible even when outdoor temperature is as low as -20°C WB.

The remote controller temperature can be set from 18°C up to 30°C (Cooling), 16°C up to 30°C (Heating)*1.

*1 Depending on the type of remote controller.

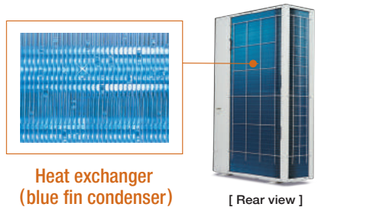


* For further information please refer to the capacity tables in the Technical Data Book.

Blue fin condenser

LE 1 LE 2

The anti-corrosion Blue Fin treatment of the heat exchanger provides greater resistance against corrosion. All models are equipped with Blue Fin condenser.



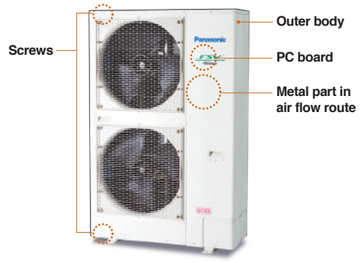
High durability outdoor unit

LE 1 LE 2

Corrosion-resistance treated for high resistance to rust and salty air to assure long-lasting performance.

Note: Selecting this unit does not completely eliminate the possibility of rust developing. For details concerning unit installation and maintenance, please consult an authorised dealer.

* Specific model with suffix “E” has this treatment.



Quiet operation mode

LE 1 LE 2

- Quiet operation mode reduces outdoor unit operating sound down to 7dB than rating.
- 3-step set point is available.
- External input signal is also available.

* Timer setting of quiet operation mode is available in High-spec Remote Controller.

Specifications and Dimensions

LE 1 Series

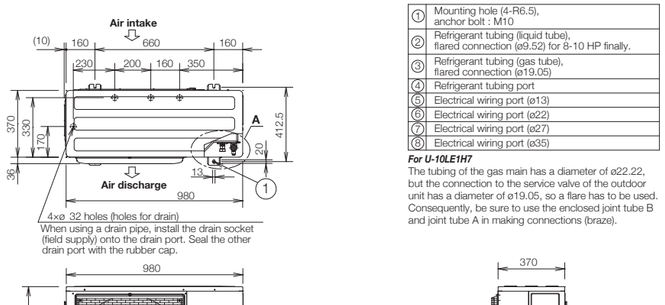
Specifications

HP				8			10		
Model name				**U-8LE1H7**			**U-10LE1H7**		
Power supply				380/400/415V/3-phase/50Hz 380/400V/3-phase/60Hz			380/400/415V/3-phase/50Hz 380/400V/3-phase/60Hz		
Voltage				380V	400V	415V	380V	400V	415V
Capacity	Cooling		kW	22.4			28.0		
			BTU/h	76,500			95,600		
	Heating		kW	25.0			28.0		
			BTU/h	85,300			95,600		
EER/COP	Cooling		W/W	4.20			3.59		
	Heating		W/W	4.52			4.55		
Dimensions (H/W/D)			mm	1,500 x 980 x 370			1,500 x 980 x 370		
Net weight			kg	132			133		
Electrical ratings	Cooling	Running current	A	8.70	8.25	7.95	12.70	12.10	11.70
		Power input	kW	5.33	5.33	5.33	7.80	7.80	7.80
	Heating	Running current	A	9.05	8.60	8.25	10.0	9.55	9.20
		Power input	kW	5.53	5.53	5.53	6.15	6.15	6.15
Starting current			A	1			1		
Air flow rate			m^3/min	150			160		
			L/s	2,500			2,666		
Refrigerant amount at shipment			kg	R410A 6.30			R410A 6.60		
Piping connection	Gas pipe		mm (inches)	Ø19.05 (Ø3/4)			Ø22.22 (Ø7/8)		
	Liquid pipe		mm (inches)	Ø9.52 (Ø3/8)			Ø9.52 (Ø3/8)		
Ambient temperature operating range				Cooling: -10˚CDB~+46˚CDB, Heating: -20˚CWB~+18˚CWB			Cooling: -10˚CDB~+46˚CDB, Heating: -20˚CWB~+18˚CWB		
Sound pressure level (Cooling)	Normal mode		dB(A)	59.0			62.0		
	Silent mode		dB(A)	52.0			55.0		
Sound power level (Cooling)	Normal mode		dB(A)	80.0			83.0		

GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27˚C DB/19˚C WB	20˚C DB
	Outdoor air temperature	35˚C DB	7˚C DB/6˚C WB

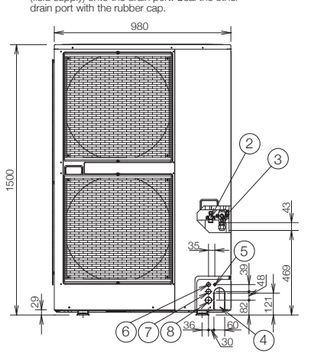
* As a foot print.
** High durable model (with suffix "E") has same specifications.

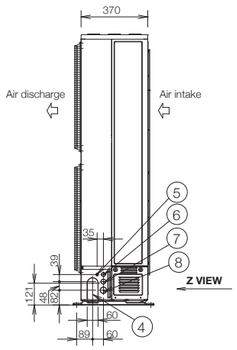
Dimensions: U-8LE1H7 / U-10LE1H7

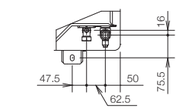


①	Mounting hole (4-R6.5), anchor bolt : M10
②	Refrigerant tubing (liquid tube), flared connection (ø9.52) for 8-10 HP finally.
③	Refrigerant tubing (gas tube), flared connection (ø19.05)
④	Refrigerant tubing port
⑤	Electrical wiring port (ø13)
⑥	Electrical wiring port (ø22)
⑦	Electrical wiring port (ø27)
⑧	Electrical wiring port (ø35)

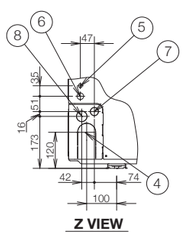
For U-10LE1H7
The tubing of the gas main has a diameter of ø22.22, but the connection to the service valve of the outdoor unit has a diameter of ø19.05, so a flare has to be used. Consequently, be sure to use the enclosed joint tube B and joint tube A in making connections (braze).







A VIEW



Z VIEW

Unit: mm

NEW LE 2 Series

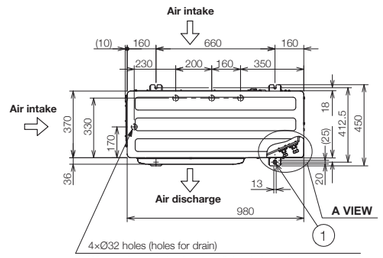
Specifications

HP				4			5			6		
Model name				**U-4LE2H4**			**U-5LE2H4**			**U-6LE2H4**		
Power supply				220/230/240V/1-phase/50Hz 220/230V/1-phase/60Hz			220/230/240V/1-phase/50Hz 220/230V/1-phase/60Hz			220/230/240V/1-phase/50Hz 220/230V/1-phase/60Hz		
Voltage				220V	230V	240V	220V	230V	240V	220V	230V	240V
Capacity	Cooling		kW	12.1			14.0			15.5		
			BTU/h	41,300			47,800			52,900		
	Heating		kW	12.5			16.0			16.5		
			BTU/h	42,700			54,600			56,300		
EER/COP	Cooling		W/W	5.08			4.61			4.27		
	Heating		W/W	5.95			5.25			5.08		
Dimensions (H/W/D)			mm	996 x 980 x 370			996 x 980 x 370			996 x 980 x 370		
Net weight			kg	106			106			106		
Electrical ratings	Cooling	Running current	A	11.90	11.40	10.90	15.20	14.50	13.90	18.10	17.30	16.60
		Power input	kW	2.38	2.38	2.38	3.04	3.04	3.04	3.63	3.63	3.63
	Heating	Running current	A	10.60	10.10	9.70	15.20	14.60	14.0	16.20	15.50	14.90
		Power input	kW	2.10	2.10	2.10	3.05	3.05	3.05	3.25	3.25	3.25
Starting current			A	1			1			1		
Air flow rate			m^3/min	69			72			74		
			L/s	1,150			1,200			1,233		
Refrigerant amount at shipment			kg	R410A 6.70			R410A 6.70			R410A 6.70		
Piping connection	Gas pipe		mm (inches)	Ø15.88 (Ø5/8)			Ø15.88 (Ø5/8)			Ø15.88 (Ø5/8)		
	Liquid pipe		mm (inches)	Ø9.52 (Ø3/8)			Ø9.52 (Ø3/8)			Ø9.52 (Ø3/8)		
Ambient temperature operating range				Cooling: -10˚CDB~+46˚CDB, Heating: -20˚CWB~+18˚CWB			Cooling: -10˚CDB~+46˚CDB, Heating: -20˚CWB~+18˚CWB			Cooling: -10˚CDB~+46˚CDB, Heating: -20˚CWB~+18˚CWB		
Sound pressure level (Cooling)	Normal mode		dB(A)	52.0			53.0			54.0		
	Silent mode		dB(A)	45.0			46.0			47.0		
Sound power level (Cooling)	Normal mode		dB(A)	69.0			71.0			73.0		

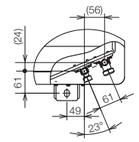
GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27˚C DB/19˚C WB	20˚C DB
	Outdoor air temperature	35˚C DB	7˚C DB/6˚C WB

* As a foot print.
** High durable model (with suffix "E") has same specifications.

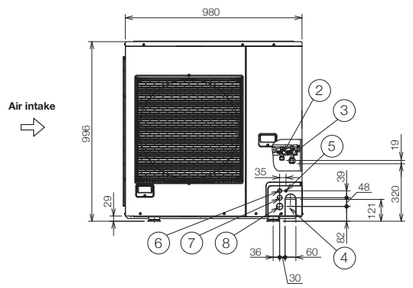
Dimensions: U-4LE2H4 / U-5LE2H4 / U-6LE2H4

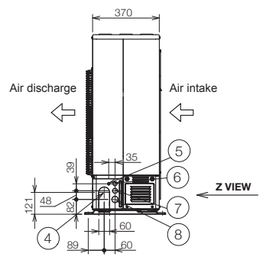


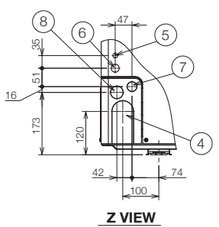
①	Mounting hole (4-R6.5), anchor bolt : M10
②	Refrigerant tubing (liquid tube), flared connection (Ø9.52)
③	Refrigerant tubing (gas tube), flared connection (Ø15.88)
④	Refrigerant tubing port
⑤	Electrical wiring port (Ø13)
⑥	Electrical wiring port (Ø22)
⑦	Electrical wiring port (Ø27)
⑧	Electrical wiring port (Ø35)



A VIEW







Z VIEW

Unit: mm

Product Line-up

Indoor Unit

Class	22	28	36	45	56	60	73	90	106	140	160	180	224	280	Wireless remote control		Functions
Capacity	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Type with built-in sensor	Type with separately installed sensor	
Type / kW / BTU/h	2.2/2.5 7,500/8,500	2.8/3.2 9,600/11,000	3.6/4.2 12,000/14,000	4.5/5.0 15,000/17,000	5.6/6.3 19,000/21,000	6.0/7.1 20,400/24,200	7.3/8.0 25,000/27,000	9.0/10.0 30,000/34,000	10.6/11.4 36,000/39,000	14.0/16.0 47,800/54,600	16.0/18.0 54,600/61,500	18.0/20.0 61,400/68,200	22.4/25.0 76,400/85,300	28.0/31.5 95,500/107,500			
F2 type **Mid Static Ducted** ECONAVI	S-22MF2E5A	S-28MF2E5A	S-36MF2E5A	S-45MF2E5A	S-56MF2E5A	S-60MF2E5A	S-73MF2E5A	S-90MF2E5A	S-106MF2E5A	S-140MF2E5A	S-160MF2E5A					●	self-diagnosing, Auto fan, Mild dry, Auto restart, Drain pump, DC motor
M1 type **Slim Low Static Ducted** ECONAVI	S-22MM1E5A	S-22MM1E5A	S-36MM1E5A	S-45MM1E5A	S-56MM1E5A											●	self-diagnosing, Auto fan, Mild dry, Auto restart, Drain pump, DC motor
Z1 type **Slim Low Static Ducted Twenty Series** ECONAVI	S-22MZ1H4A	S-28MZ1H4A	S-36MZ1H4A	S-45MZ1H4A	S-56MZ1H4A	S-60MZ1H4A	S-73MZ1H4A									●	self-diagnosing, Auto fan, Mild dry (High Static Ducted), Auto restart, Drain pump
E2 type **High Static Ducted / Energy Saving High-Fresh Air Ducted**												S-180ME2E5*	S-224ME2E5 (High Fresh Air)	S-280ME2E5 (High Fresh Air)			self-diagnosing, Auto fan, Mild dry, Auto restart, Drain pump
E1 type **High Static Ducted**							S-73ME1E5		S-106ME1E5	S-140ME1E5			S-224ME1E5	S-280ME1E5		●	self-diagnosing, Auto fan, Mild dry, Auto restart
H1 type **High Fresh Air Ducted**										S-140MH1H5 (High Fresh Air)			S-224MH1H5 (High Fresh Air)	S-280MH1H5 (High Fresh Air)			self-diagnosing, Auto fan, Auto restart
K2 type **Wall Mounted** ECONAVI NEW Class 45-106	S-22MK2E5A	S-28MK2E5A	S-36MK2E5A	S-45MK2E5A	S-56MK2E5A		S-73MK2E5A		S-106MK2E5A						●	●	self-diagnosing, Auto fan, Mild dry, Auto flap, Auto restart, Drain pump, DC motor
U2 type **4-Way Cassette** Panel No. CZ-KPU3/CZ-KPU3A ECONAVI** NEW	S-22MU2E5A	S-28MU2E5A	S-36MU2E5A	S-45MU2E5A	S-56MU2E5A	S-60MU2E5A	S-73MU2E5A	S-90MU2E5A	S-106MU2E5A	S-140MU2E5A	S-160MU2E5A				●	●	self-diagnosing, Auto fan, Mild dry, Auto flap, Auto restart, Air swing, Drain pump, DC motor
Y2 type **4-Way Mini Cassette** Panel No. CZ-KPY3A ECONAVI	S-22MY2E5A	S-28MY2E5A	S-36MY2E5A	S-45MY2E5A	S-56MY2E5A										●	●	self-diagnosing, Auto fan, Mild dry, Auto flap, Auto restart, Air swing, Drain pump, DC motor
L1 type **2-Way Cassette** Panel No. CZ-02KPL2 Panel No. CZ-03KPL2 (Only for S-73ML1E5)	S-22ML1E5	S-28ML1E5	S-36ML1E5	S-45ML1E5	S-56ML1E5		S-73ML1E5								●	●	self-diagnosing, Auto fan, Mild dry, Auto flap, Auto restart, Air swing, Drain pump
D1 type **1-Way Cassette** Panel No. CZ-KPD2		S-28MD1E5	S-36MD1E5	S-45MD1E5	S-56MD1E5		S-73MD1E5								●	●	self-diagnosing, Auto fan, Mild dry, Auto flap, Auto restart, Air swing, Drain pump, DC motor
T2 type **Ceiling** ECONAVI			S-36MT2E5A	S-45MT2E5A	S-56MT2E5A		S-73MT2E5A		S-106MT2E5A	S-140MT2E5A					●	●	self-diagnosing, Auto fan, Mild dry, Auto flap, Auto restart, Air swing, Drain pump
P1 type **Floor Standing**	S-22MP1E5	S-28MP1E5	S-36MP1E5	S-45MP1E5	S-56MP1E5		S-71MP1E5									●	self-diagnosing, Auto fan, Mild dry, Auto restart
R1 type **Concealed Floor Standing**	S-22MR1E5	S-28MR1E5	S-36MR1E5	S-45MR1E5	S-56MR1E5		S-71MR1E5									●	self-diagnosing, Auto fan, Mild dry, Auto restart

* Only for High Static Ducted
** Only for CZ-KPU3A

Self-diagnosing function · Automatic fan operation · Mild dry · Intelligent auto flap control · Automatic restart function for power failure · Air swing · Built-in drain pump · DC motor

Outdoor Unit

Type / Capacity	4HP	5HP	6HP	8HP	10HP
LE Series NEW Capacity 4-6HP	LE2 Series	LE2 Series	LE2 Series	LE1 Series	LE1 Series