

2-PIPE Mini-VRF LE/LZ Series

High External Static Pressure 35Pa

High external static pressure 35Pa

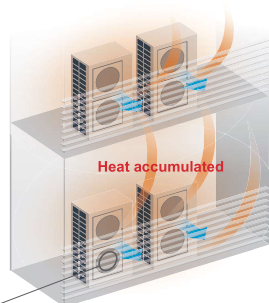
LE1 LE2 LZ2

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.



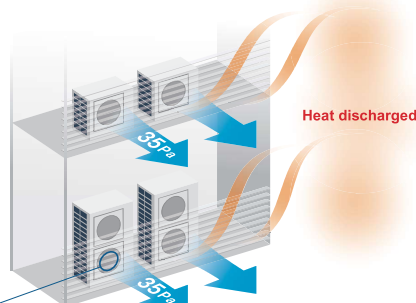
Previous fan

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



LE/LZ series - High pressure

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



LE/LZ series fan

The new LE/LZ 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.



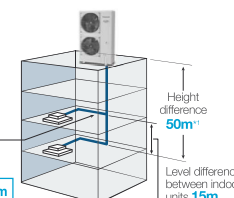
Long piping design length for greater design flexibility

LE1 LE2 LZ2

Adaptable to various building types and sizes

Actual piping length **150m**
(equivalent piping length **175m**)

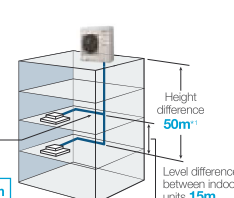
Max. total piping length:300m



LE1

Actual piping length **150m**
(equivalent piping length **175m**)

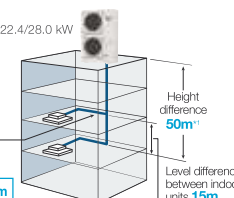
Max. total piping length:180m



LE2

Actual piping length **100m**
(equivalent piping length **125m**)

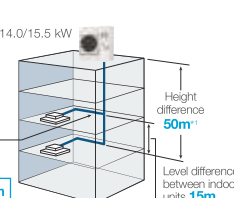
Max. total piping length:300m



LZ2

Actual piping length **90m**
(equivalent piping length **115m**)

Max. total piping length:180m



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

Refrigerant chargeless up to 50m

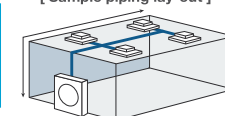
LE2

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

Chargeless
Max. total piping length: 50m

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

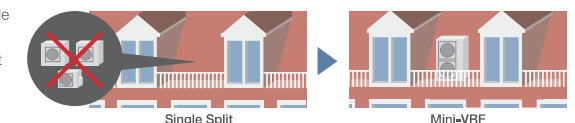
[Sample piping lay-out]



Compact design

LE1 LE2 LZ2

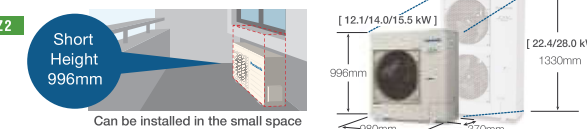
Also, since Mini VRF LE/LZ Series is a single unit, it is possible to install the unit in more various places compared to the Single Split system.



Short height of 996mm

LE2 LZ2

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.

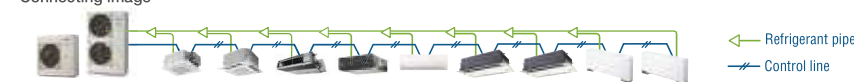


Wide range of connectable indoor units

LE1 LE2 LZ2

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

Connecting image



Maximum connectable indoor units and allowable indoor/outdoor capacity ratio

Model	Max connectable indoor units	Max allowable indoor/outdoor capacity ratio	Model	Max connectable indoor units	Max allowable indoor/outdoor capacity ratio
U-4LE2R5	7pcs.	50~130%	U-4LZ2E5	7pcs.	50~150%
U-4LE2R8	7pcs.	50~130%	U-4LZ2E8	7pcs.	50~150%
U-5LE2R5	8pcs.	50~130%	U-5LZ2E5	8pcs.	50~150%
U-5LE2R8	8pcs.	50~130%	U-5LZ2E8	8pcs.	50~150%
U-6LE2R5	9pcs.	50~130%	U-6LZ2E5	9pcs.	50~150%
U-6LE2R8	9pcs.	50~130%	U-6LZ2E8	9pcs.	50~150%
U-8LE1R8	13pcs.	50~130%	U-8LZ2E8	15pcs.	50~150%
U-10LE1R8	13pcs.	50~130%	U-10LZ2E8	16pcs.	20~150%

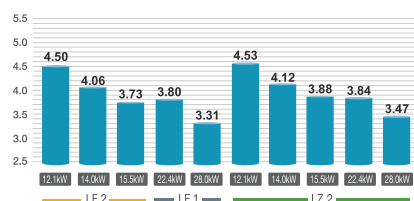
2-PIPE Mini-VRF LE/LZ Series

High efficiency

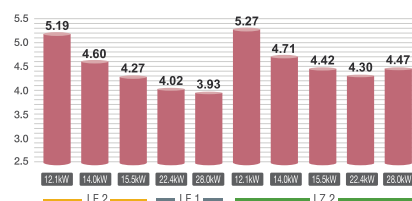
LE1 LE2 LZ2

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

COOLING

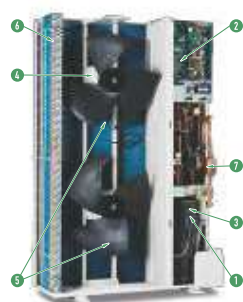


HEATING



Energy savings design

LE1 LE2 LZ2



- Panasonic Inverter Compressor**
A large-capacity inverter compressor has been adopted. The inverter compressor is superior in performance with improved partial-load capacity.
- Printed Circuit Board**
The number of PCB is 2 pieces for making maintenance easier.
- Accumulator**
A large accumulator has been adopted to maintain compressor reliability because of the increased refrigerant quantity, which allows an extended max piping length.
- DC Fan Motor**
Checking load and outside temperature, the DC motor is controlled for optimum air volume.
- 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.
- Heat Exchanger & Copper Tubes**
The heat exchanger size and the copper tube sizes in the heat exchanger have been redesigned to increase efficiency.
- Oil Separator**
A centrifugal separator has been adopted to improve oil separation efficiency and reduce refrigerant pressure loss.

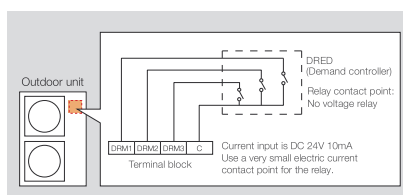
Flexible demand response with the optional terminal block

LE1 LE2 LZ2

Demand response

Featuring inverter control technology, LE1,LE2,LZ2* series 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 correspond with the local power management for reducing peak power consumption, and to reduce annual power consumption with minimal loss in comfort.

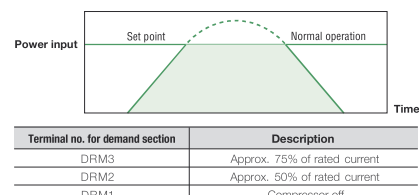
*LZ2 series require to purchase Demand Terminal Kit.



Demand control setting level and unit behavior image

To use this function with the LZ2 series, it is necessary to purchase the Demand Terminal Kit (CZ-CAPDC3) (sold separately), install it on the outdoor unit at the site, and perform the appropriate settings. (LE1 and LE2 series have terminals as standard equipment.)

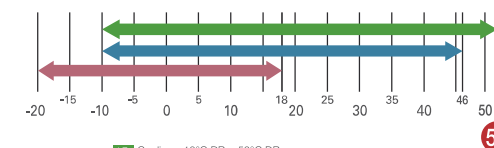
A maintenance remote controller for service and special connection wiring are required for setting up the outdoor unit after installation of the kit, please contact your dealer for details.



Wide operating range

LE1 LE2 LZ2

- 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 52°C DB. (LZ2 series)
- 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.

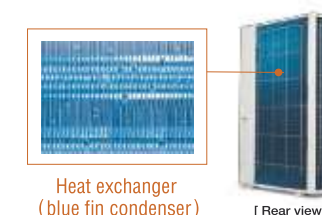
*1 Depending on the type of remote controller.

LZ2 Cooling: -10°C DB ~ 52°C DB
LE Cooling: -10°C DB ~ 46°C DB
LZ2 Heating: -20°C WB ~ 18°C WB
* For further information please refer to the capacity tables in the Technical Data Book.

Outdoor Blue fin condenser

LE1 LE2 LZ2

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

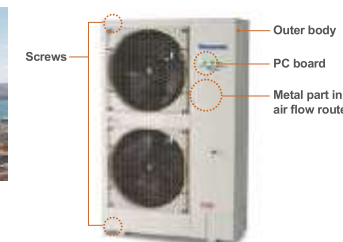
LE1 LE2

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

LE1 LE2 LZ2

- 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 (CZ-RTC5B/CZ-RTC6 series).



2-PIPE Mini-FSV LE2 Series

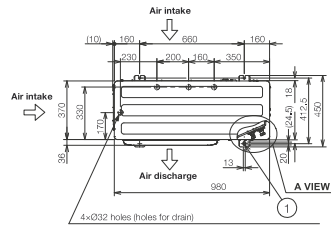
			12.1		12.1		14.0		14.0		15.5		15.5		
Model name			U-4LE2R5		U-4LE2R8		U-5LE2R5		U-5LE2R8		U-6LE2R5		U-6LE2R8		
Power supply			230/240V/1-phase/50Hz		400/415V/3-phase/50Hz		230/240V/1-phase/50Hz		400/415V/3-phase/50Hz		230/240V/1-phase/50Hz		400/415V/3-phase/50Hz		
Voltage			230V	240V	400V	415V	230V	240V	400V	415V	230V	240V	400V	415V	
Capacity	Cooling	kW	12.1		12.1		14.0		14.0		15.5		15.5		
		BTU/h	41,300		41,300		47,800		47,800		52,900		52,900		
	Heating	kW	12.5		12.5		16.0		16.0		16.5		16.5		
		BTU/h	42,700		42,700		54,600		54,600		56,300		56,300		
EER/COP	Cooling	W/W	4.50		4.50		4.06		4.06		3.73		3.73		
	Heating	W/W	5.19		5.19		4.60		4.60		4.27		4.27		
Dimensions (H/W/D)			mm		996 x 980 x 370		996 x 980 x 370		996 x 980 x 370		996 x 980 x 370		996 x 980 x 370		
Net weight			kg		106		106		106		106		106		
Electrical ratings	Cooling	Running current	A	12.70	12.20	4.17	4.02	16.30	15.60	5.30	5.11	19.40	18.60	6.37	6.14
		Power input	kW	2.69	2.69	2.69	2.69	3.45	3.45	3.45	3.45	4.15	4.15	4.15	4.15
	Heating	Running current	A	11.60	11.20	3.78	3.64	16.60	15.90	5.34	5.15	18.20	17.50	5.93	5.71
		Power input	kW	2.41	2.41	2.41	2.41	3.48	3.48	3.48	3.48	3.86	3.86	3.86	3.86
Starting current			A	1		1		1		1		1		1	
Air flow rate			m³/h		4,140		4,140		4,320		4,440		4,440		
			L/s		1,150		1,150		1,200		1,233		1,233		
Refrigerant amount at shipment			kg		R410A 6.70		R410A 6.70		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)		Ø15.88 (Ø5/8)		
			Liquid pipe		mm (inches)		Ø9.52 (Ø3/8)		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		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		52.0		53.0		53.0		54.0		54.0		
	Silent mode (S)	dB(A)	45.0		45.0		46.0		46.0		47.0		47.0		
	Normal mode	dB	69.0		69.0		71.0		71.0		73.0		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

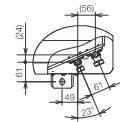
These specifications are subject to change without notice.
High durable model (with suffix "E") has same specifications,
Applies to single phase models only.

Dimensions

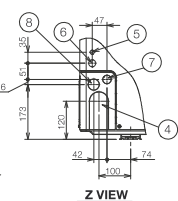
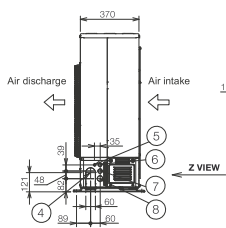
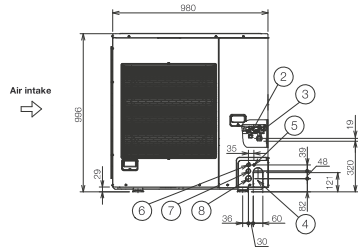
U-4LE2R5 / U-4LE2R8
U-5LE2R5 / U-5LE2R8
U-6LE2R5 / U-6LE2R8



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



Unit: mm

2-PIPE Mini-FSV LE1 Series

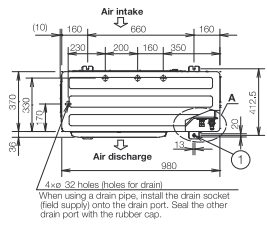
kW			22.4		28.0	
Model name			U-8LE1R8		U-10LE1R8	
Power supply			400/415V/3-phase/50Hz 380/400V/3-phase/60Hz		400/415V/3-phase/50Hz 380/400V/3-phase/60Hz	
Voltage			400V	415V	400V	415V
Capacity	Cooling	kW	22.4		25.0	
		BTU/h	76,500		85,300	
	Heating	kW	25.0		28.0	
		BTU/h	85,300		95,600	
EER/COP	Cooling	W/W	3.80		3.31	
	Heating	W/W	4.02		3.93	
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	9.15	8.80	11.70	11.30
		Power input kW	5.89	5.89	7.55	7.55
	Heating	Running current A	9.65	9.30	11.10	10.70
		Power input kW	6.22	6.22	7.13	7.13
Starting current		A	1		1	
Air flow rate	m³ / h		9,000		9,600	
	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)	60.0		62.0	
	Silent mode (3)	dB(A)	53.0		55.0	
	Sound power level (Cooling)	Normal mode	dB	81.0		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

These specifications are subject to change without notice.
Anti-corrosion model (with suffix "E") has the same specifications.

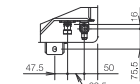
Dimensions

U-8LE1R8 / U-10LE1R8

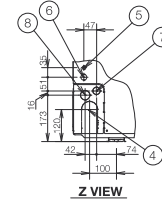
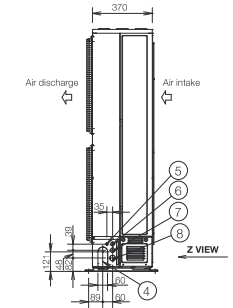


①	Mounting hole (4-R6.5), anchor bolt: M10
②	Refrigerant tubing (liquid tube), flared connection (Ø9.52) for 5-10 HP finally.
③	Refrigerant tubing (gas tube), flared connection (Ø19.05)
④	Refrigerant tubing port
⑤	Electrical wiring port (Ø13)
⑥	Electrical wiring port (Ø22)
⑦	Electrical wiring port (Ø27)
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 (brazing).



A VIEW



Unit: mm

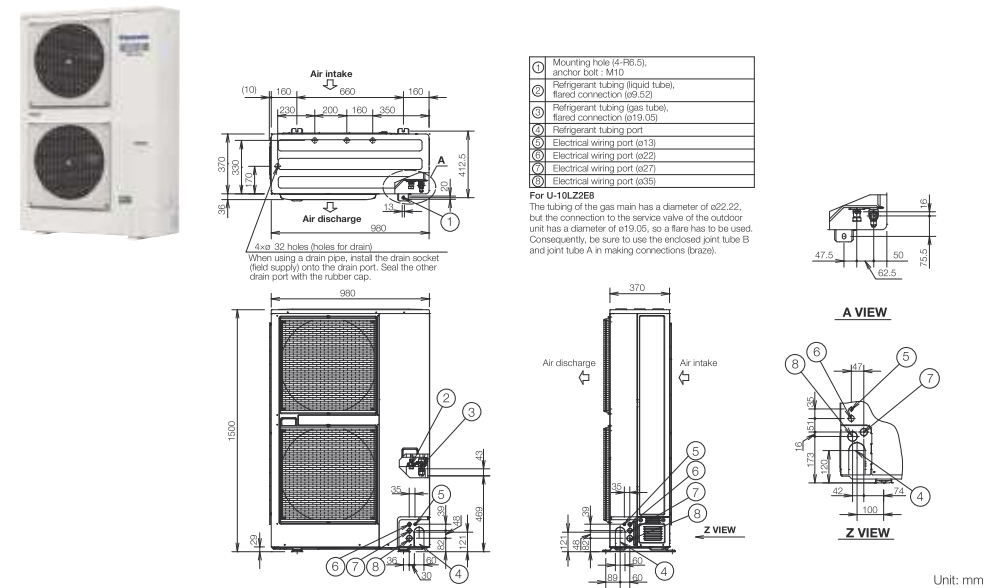
2-PIPE Mini-VRF LZ2 Series

kW		22.4		28.0			
Model name		U-8LZ2E8		U-10LZ2E8			
Power supply		400/415V/3-phase/50Hz		400/415V/3-phase/50Hz			
Voltage		400V	415V	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	3.84	3.47			
	Heating	W/W	4.30	4.47			
Dimensions (H/W/D)		mm	1,500 x 980 x 370	1,500 x 980 x 370			
Net weight		kg	125	126			
Electrical ratings	Cooling	Running current	A	9.25	8.91	12.5	12.1
		Power input	kW	5.83	8.07		
	Heating	Running current	A	9.32	8.98	9.93	9.57
		Power input	kW	5.81	6.26		
Starting current		A	1	1			
Air flow rate		m³ / h	9,480	10,020			
		L/s	2,633	2,783			
Refrigerant amount at shipment		kg	R32 4.9	R32 5.1			
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~+52°CDB, Heating:-20°CWB~+18°CWB	Cooling:-10°CDB~+52°CDB, Heating:-20°CWB~+18°CWB			
Sound pressure level (Cooling)	Normal mode	dB(A)	59.0	60.0			
	Silent mode(1/2/3/4)	dB(A)	56.0/54.0/52.0/50.0	57.0/55.0/53.0/50.0			
Sound power level (Cooling)		Normal mode	dB	72.0	74.0		

Global remarks	Rated conditions:	Cooling	Heating	These specifications are subject to change without notice. High durable model (with suffix "E") has same specifications.
	Indoor air temperature	27°C DB / 19°C WB	20°C DB	
	Outdoor air temperature	35°C DB	7°C DB / 6°C WB	

Dimensions

U-8LZ2E8 / U-10LZ2E8



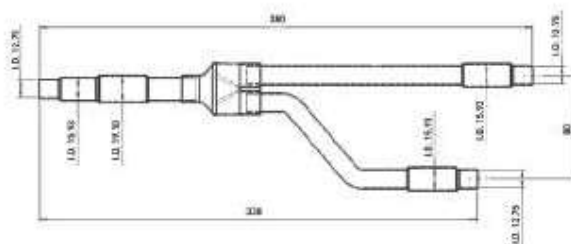
2-PIPE Mini-VRF

Distribution Joint Kits

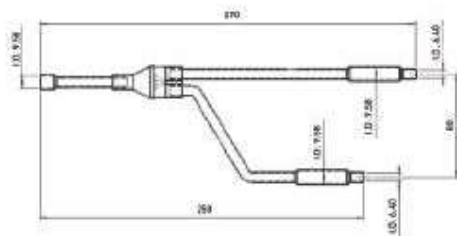
CZ-P160BK2

Use: For indoor unit (Capacity after distribution joint is 22.4 kW or less.)

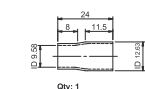
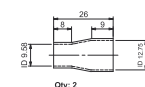
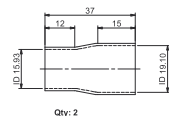
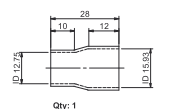
GAS PIPING



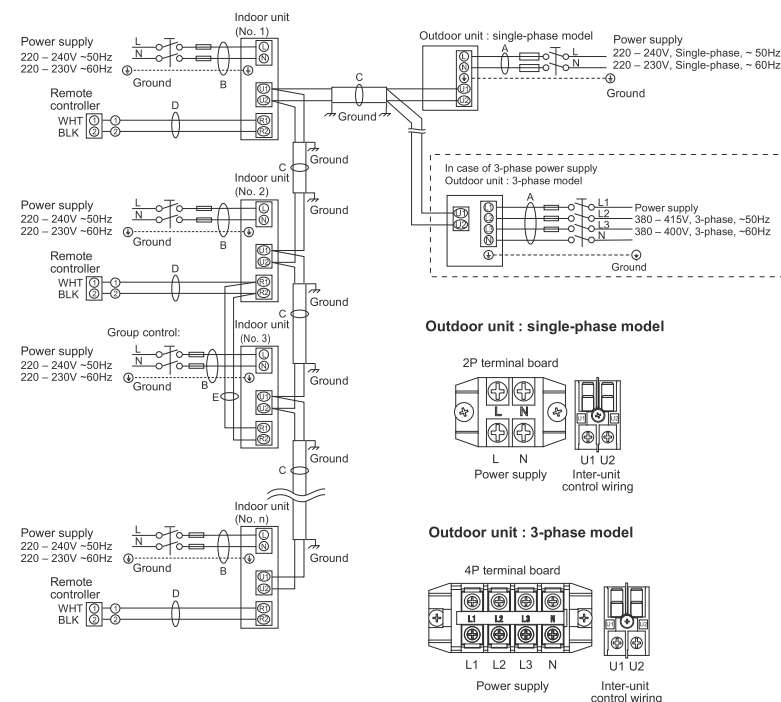
LIQUID PIPING



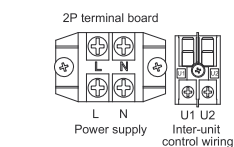
All measurements are in mm. Size of connection points on each part shown are inside diameters of piping.



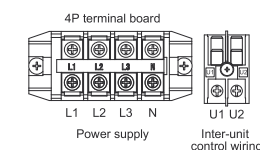
Wiring System Diagrams



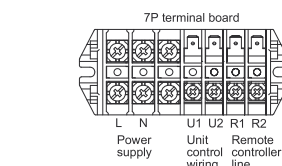
Outdoor unit : single-phase model



Outdoor unit : 3-phase model



Indoor unit



T1, F1, E1, D1, L1 Types

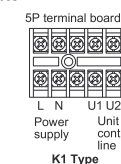
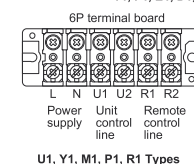
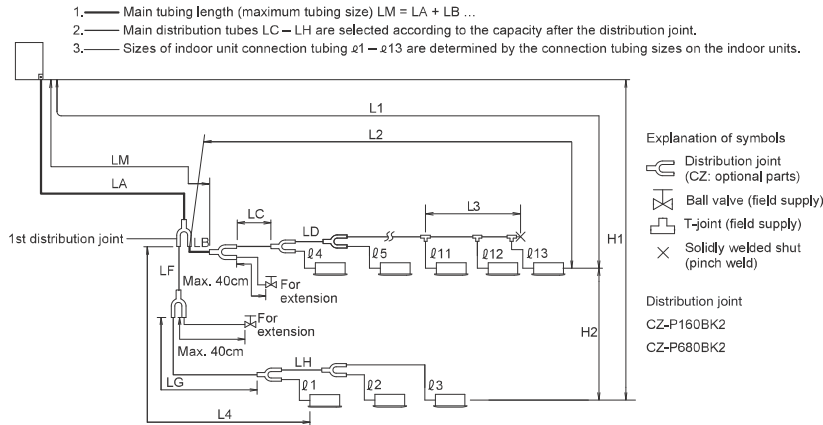


Fig. 2-1

2-PIPE Mini-VRF

Piping design

Select the installation location so that the length and size of refrigerant piping are within the allowable range shown in the figure below.



Ranges that Apply to Refrigerant Piping Lengths and to Differences in Installation Heights

Items	Mark	Contents	Length (m)			
Allowable piping length	L1	Max. piping length	LE2	LE1	LZ2 (4/5/6-P)	LZ2 (8/10)
			Actual length	≤150	≤150	≤100
			Equivalent length	≤175	≤175	≤125
	$\Delta L (L2 - L4)$	Difference between max. length and min. length from the 1st distribution joint	≤50	≤50	≤50	≤50
	LM	Max. length of main piping (at maximum size) *Even after 1st distribution joint, LM is allowed if at maximum piping length.	—	—	—	—
Allowable elevation difference	$\phi 1, \phi 2 - \phi 7$	Max. length of each distribution pipe	≤50	≤50	≤50	≤50
	$L1 + \phi 1 + \phi 2 - \phi 6 + LF + LG + LH$	Total max. piping length including length of each distribution pipe (only liquid piping)	≤180	≤300	≤180	≤300
	H1	When outdoor unit is installed higher than indoor unit	≤50	≤50	≤50	≤50
	H2	When outdoor unit is installed lower than indoor unit	≤40	≤40	≤40	≤40
Allowable length of joint piping	L3	Max. difference between indoor units	≤15	≤15	≤15	≤15
		T-joint piping (field-supply); Max. piping length between the first T-joint and solidly welded-shut end point	≤2	≤2	≤2	≤2

L = Length, H = Height

Piping Size

Main Piping Size (LA) LE1/LE2/LZ2 series

Outdoor units	12.1 kW (4HP)	14.0 kW (5HP)	15.5 kW (6HP)	22.4 kW (8HP)	25.0/28.0 kW (10HP)
Gas piping mm (inches)	ø15.88 (ø5/8)			ø19.05 (ø3/4)	ø22.22 (ø7/4)
	Flare connection				Brazing connection
Liquid piping mm (inches)	ø9.52 (ø3/8)				
	Flare connection				

Note :If future extension is planned, select the piping diameter based on the total horsepower after extension.

Indoor Unit Piping Connection (φ1,φ2...φn-1)

LE1/LE2 series

Indoor unite type	22	28	36	45	56	60	71/73	90	106	140	160	180	224	280		
Gas tubing mm (inches)	ø12.7 (ø1/2)					ø15.88 (ø5/8)						ø19.05 (ø3/4)		ø22.22 (ø7/8)		
Liquid tubing mm (inches)	ø6.35 (ø1/4)					ø9.52 (ø3/8)										

LZ2 series

Indoor unite type	22	28	36	45	56	60	71/73	90	106	140	160
Gas piping mm (inches)	ø12.7 (ø1/2)								ø15.88 (ø5/8)		
Liquid piping mm (inches)	ø6.35 (ø1/4)								ø9.52 (ø3/8)		

Main Piping Size After Distribution (LB, LC...) LE1/LE2/LZ2 series

Total capacity after distribution	Below kW		7.1 (2.5HP)	16.0 (6 HP)	22.5 (8.1 HP)	—
	Over kW		—	7.1 (2.5 HP)	16.0 (6 HP)	22.5 (8.1 HP)
Piping size	Gas piping	(mm)	ø12.7	ø15.88	ø19.05	ø22.22
		(inches)	ø1/2	ø5/8	ø3/4	ø7/8
	Liquid piping	(mm)	ø9.52	ø9.52	ø9.52	ø9.52
		(inches)	ø3/8	ø3/8	ø3/8	ø3/8

kW = kilowatts
 Note :In case the total capacity of connected indoor units exceeds the total capacity of the outdoor units, select the main piping size for the total capacity of the outdoor units.

System Limitations

LE1/LE2 series

Outdoor units	12.1 kW (4HP)	14.0 kW (5HP)	15.5 kW (6HP)	22.4 kW (8 HP)	25.0 kW (10 HP)
Number of max. connectable indoor units	7	8	9	13	13
Max. allowable indoor/outdoor capacity ratio	50 - 130%			50 - 130%	

LZ2 series

Outdoor units	12.1 kW (4HP)	14.0 kW (5HP)	15.5 kW (6HP)	22.4 kW (8 HP)	28.0 kW (10 HP)
Number of max. connectable indoor units	7	8	9	15	16
Max. allowable indoor/outdoor capacity ratio	50 - 150%				20 - 150%