

# Slim 3-Pipe control box kit / Multiple connection type

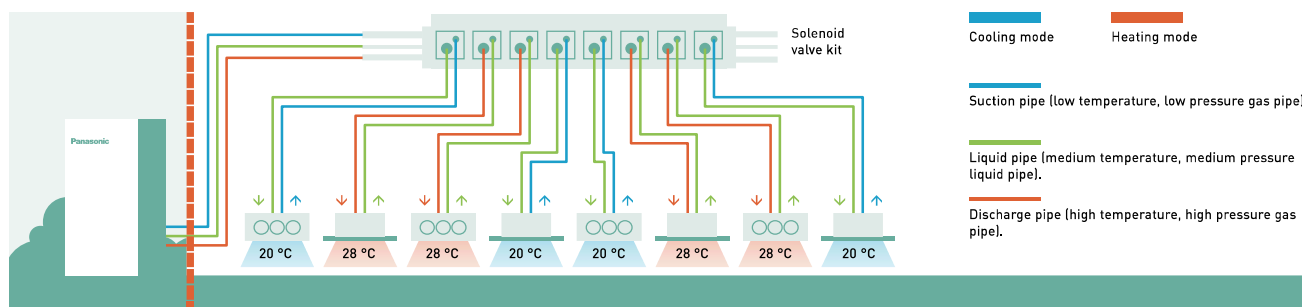
Heat recovery Box to connect multiple indoor units with just one box, 4, 6 and up to 8 indoor units or groups.

The height is only 200 mm, which is especially advantageous in hotel applications, where space for connecting several boxes is limited.

## Individual control of multiple indoor units with solenoid valve kits.

- Any design and layout can be used in a single system.
- Cooling operation is possible up to an outdoor temperature of -10 °C.

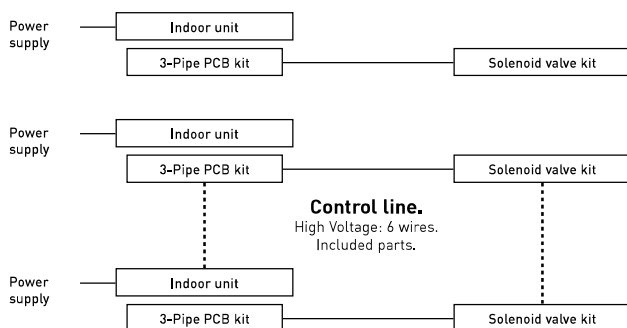
System structure.



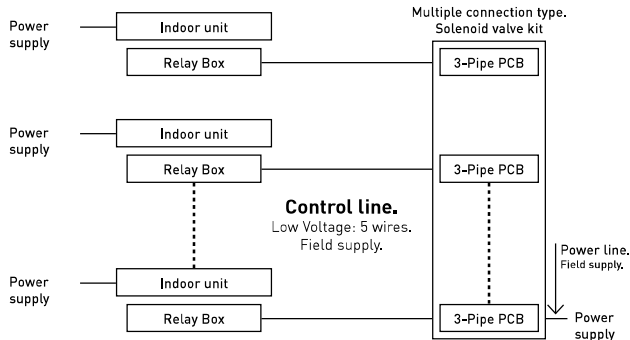
	1 port	4 port	6 port	8 port
<b>56 type</b>	CZ-P56HR3	CZ-P456HR3	CZ-P656HR3	CZ-P856HR3
<b>160 type</b>	CZ-P160HR3	CZ-P4160HR3	—	—

## Solenoid valve kit / wiring work

### Current model / single connection type.



### New model / multiple connection type.



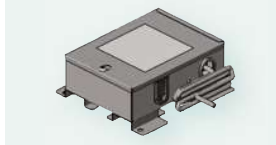
**3-Pipe PCB kit.**  
Separately purchased.



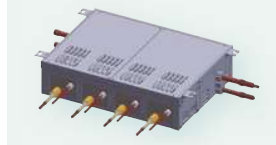
**Single HR3 kit.**



**Signal Relay Box.**  
Included accessory.

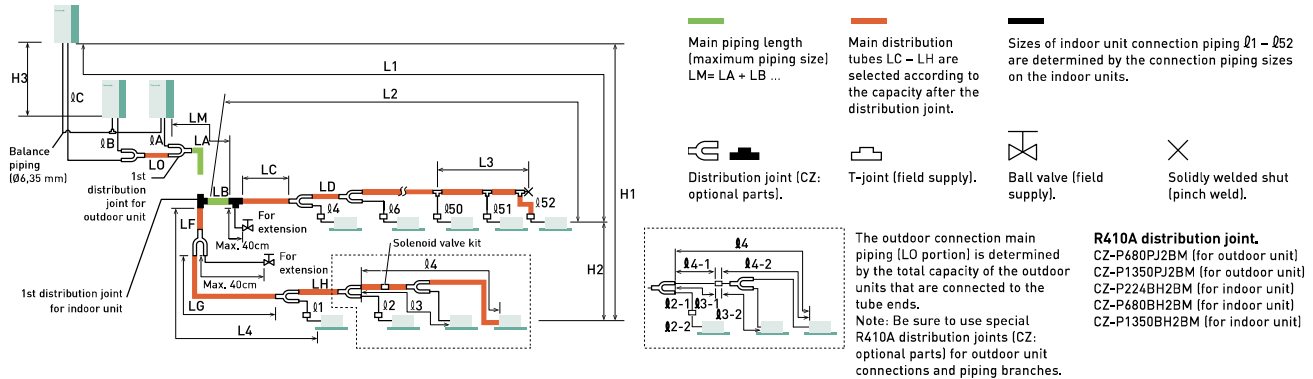


**Multiple HR3 kit.**



# 3-Pipe ECOi EX MF3 Series piping design

Select the installation location so that the length and size of refrigerant tubing 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	Maximum piping length	Actual length ≤200 <sup>1)</sup> Equivalent length ≤210 <sup>1)</sup>
	Δ L (L2-L4)	Difference between maximum length and minimum length from the 1st distribution joint	≤50 <sup>2)</sup>
	LM	Maximum length of main piping (at maximum size) * Even after 1st distribution joint, LM is allowed if at maximum piping length.	— <sup>3)</sup>
	Ø1, Ø2- Ø52	Maximum length of each distribution tube	≤50 <sup>4)</sup>
	L1+ Ø1+ Ø2- Ø51+ ØA+ØB+LF+LG+LH	Total maximum piping length including length of each distribution tube (only liquid piping)	≤500
	ØA, ØB+LO, ØC+LO	Maximum piping length from outdoor's 1st distribution joint to each outdoor unit	≤10
Allowable elevation difference	H1	When outdoor unit is installed higher than indoor unit	≤50
	H1	When outdoor unit is installed lower than indoor unit	≤40
	H2	Maximum difference between indoor units	≤15 <sup>5)</sup>
	H3	Maximum difference between outdoor units	≤4
Allowable length of joint piping	L3	T-joint piping (field-supply); Maximum piping length between the first T-joint and solidly welded-shut end point	≤2

L = Length, H = Height

1) If the longest piping length (L1) exceeds 90 m (equivalent length), increase the sizes of the main pipes (LM) by 1 rank for suction pipes, discharge pipes and liquid pipes. Use a field supply reducer. Select the pipe size from the table of main piping sizes (Table 3) and from the table of refrigerant piping sizes (Table 9). 2) If the longest main piping length (LM) exceeds 50 m, increase the main piping size at the portion before 50 m by 1 rank for the suction pipes and discharge pipes. Use a field supply reducer. Determine the length less than the limitation of allowable maximum piping length. For the portion that exceeds 50 m, set based on the main piping size (LA) listed in Table 3. 3) If the piping length marked "L" (L2-L4) exceeds 40 m, increase the piping size at the portion after the 1st distribution joint by 1 rank for the liquid pipe, suction pipe and discharge pipe. Refer to the Technical Data for the details. 4) If any of the piping length exceeds 30 m, increase the size of the suction pipes, discharge pipes and liquid pipes by 1 rank. \* The outdoor connection main piping (LO portion) is determined by the total capacity of the outdoor units that are connected to the pipe ends.

## System limitations.

Maximum number allowable connected outdoor units	3
Maximum capacity allowable connected outdoor units	135 kW [48 HP]
Maximum connectable indoor units	52
Maximum allowable indoor / outdoor capacity ratio	50-150 %

1) In the case of 24 HP (type 68 kW) or smaller units, the number is limited by the total capacity of the connected indoor units.  
2) Up to 3 units can be connected if the system has been extended.  
3) It is strongly recommended that you choose the unit so the load can become between 50 and 130 %.

## Additional refrigerant charge.

Liquid piping size (Inch (mm))	1/4 (6,35)	3/8 (9,52)	1/2 (12,70)	5/8 (15,88)	3/4 (19,05)	7/8 (22,22)
Amount of refrigerant charge (g/m)	26	56	128	185	259	366

## Necessary amount of additional refrigerant charge per meter, according to discharge piping size.

Discharge piping size	Inch (mm)	1/2 (12,70)	5/8 (15,88)	3/4 (19,05)	7/8 (22,22)	1 (25,40)	1-1/8 (28,58)	1-1/4 (31,75)	1-1/2 (38,10)
Additional amount	g/m	12	21	31	41	55	71	89	126

## Refrigerant piping.

Piping size (mm)						Material Temper - 0						Material Temper - 1/2 H, H					
Ø6,35	t 0,8	Ø12,70	t 0,8	Ø19,05	t 1,2	Ø22,22	t 1,0	Ø28,58	t 1,0	Ø38,10	t 1,15	Ø22,22	t 1,0	Ø28,58	t 1,0	Ø38,10	t 1,15
Ø9,52	t 0,8	Ø15,88	t 1,0			Ø25,40	t 1,0	Ø31,75	t 1,1	Ø41,28	t 1,20						

\* When bending the tubes, use a bending radius that is at least 4 times the outer diameter of the tubes. In addition, take sufficient care to avoid crushing or damaging the tubes when bending them.