

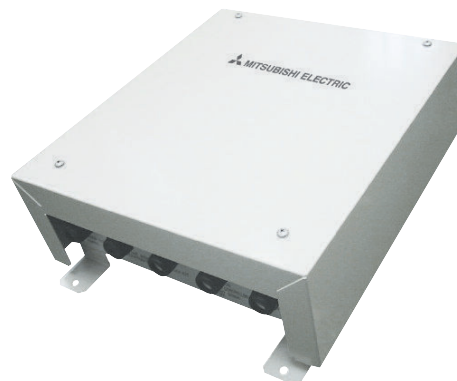
Air Conditioning

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PAC-IF013B-E R32

Air Handling Unit Controller



R32



Air Conditioning | Heating
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PUZ-ZM200-250 R32 Power Inverter Heat Pump (Three Phase) **Large Capacity Outdoor Units**

PUZ-ZM200-250 - OUTDOOR UNITS		PUZ-ZM200YKA	PUZ-ZM250YKA
Capacity (kW)	Heating (nominal)	22.4	27.0
	Cooling (nominal)	19.0	22.0
SCOP (nsh) / SEER (nsc) (BS EN14825)*1		4.50 (177.1%) / 7.49 (296.4%)	4.47 (175.7%) / 7.43 (294.3%)
SOUND PRESSURE LEVEL (dBA)	Heating/Cooling	62 / 59	62 / 59
WEIGHT (kg)		137	138
DIMENSIONS (mm)	Width x Depth x Height	1050 x 330+40 x 1338	1050 x 330+40 x 1338
PIPE SIZE mm (in)	Gas	28.58 (1 1/8")	28.58 (1 1/8")
	Liquid	9.52 (3/8")	12.7 (1/2")
ELECTRICAL SUPPLY		380-415v, 50Hz	380-415v, 50Hz
PHASE		Three	Three
SYSTEM POWER INPUT (kW)	Heating/Cooling (nominal)	5.63 / 4.95	7.81 / 6.86
	Heating/Cooling (UK)	5.07 / 4.11	7.03 / 5.69
STARTING CURRENT (A)		5	5
SYSTEM RUNNING CURRENT (A)	Heating/Cooling [MAX]	9.57 / 8.58 [22.5]	13.3 / 11.6 [22.5]
FUSE RATING (BS88) - HRC (A)		25	25
MAINS CABLE No. CORES		5	5
MAX PIPE LENGTH (m)		100	100
MAX HEIGHT DIFFERENCE (m)		30	30
CHARGE REFRIGERANT (kg) / CO ₂ EQUIVALENT (t)	R32 (GWP 675) - 30m	6.3 / 4.25	6.8 / 4.59
MAX ADDITIONAL REFRIGERANT (kg) / CO ₂ EQUIVALENT (t)	R32 (GWP 675)	9.2 / 6.21	9.2 / 6.21

*1 PUZ-ZM200YKA connected to 2 x PLA-ZM100EA, PUZ-ZM250YKA connected to 2 x PLA-ZM125EA

L1 unit

6 Requirement on local AHU design

6.1 Air flow volume

Standard air flow volume

Model capacity of outdoor unit	ZRP	35	50	60	71	100	125	140	200	250
	P	—	—	—	—	—	—	—	200	250
	SHW	—	—	—	80	112	140	—	230	—
	ZM	35	50	60	71	100	125	140	—	—
Maximum air volume	[m³/min]	12.3	18	21	24	33.6	42	48	67.2	81
	[m³/h]	738	1080	1260	1440	2016	2520	2880	4032	4860
Minimum air volume	[m³/min]	6.2	8.6	10.5	12.2	16.3	21.5	23.0	32.6	37.8
	[m³/h]	372	516	630	732	978	1290	1380	1956	2268

Make sure to keep the air flow volume within the limits of maximum and minimum below.

(1) Maximum air volume

Step mode	Number of outdoor unit	Capacities of the connected outdoor units	Maximum air volume
Manual	2-6	The same	[For PUHZ-ZRP, P, SHW models] 500% of selected outdoor unit's maximum standard air volume *1 [For PUZ-ZM models] 440% of selected outdoor unit's maximum standard air volume *2
		Different	[For PUHZ-ZRP, P, SHW models] If smaller capacity outdoor unit's rated heating capacity is under 20% of total heating capacity, 500% of bigger capacity outdoor unit's maximum standard air volume is allowable. If smaller capacity outdoor unit's rated heating capacity is 20% or more of total heating capacity, 500% of smaller capacity outdoor unit's maximum standard air volume is allowable. [For PUZ-ZM models] If smaller capacity outdoor unit's rated heating capacity is under 20% of total heating capacity, 440% of bigger capacity outdoor unit's maximum standard air volume is allowable. If smaller capacity outdoor unit's rated heating capacity is 20% or more of total heating capacity, 440% of smaller capacity outdoor unit's maximum standard air volume is allowable.
	1	—	200% of selected outdoor unit's maximum standard air volume
	Auto	2-5	[For PUHZ-ZRP, P, SHW models] 500% of the smallest capacity outdoor unit's maximum standard air volume
			[For PUZ-ZM models] 440% of the smallest capacity outdoor unit's maximum standard air volume
	1	—	200% of selected outdoor unit's maximum standard air volume

*1. 600% of selected outdoor unit's maximum standard air volume is available ONLY when 6 same capacity outdoor units are connected.

*2. 528% of selected outdoor unit's maximum standard air volume is available ONLY when 6 same capacity outdoor units are connected.

(2) Minimum air volume

Total amount of selected outdoor unit's minimum standard air volume is allowable.

6.2 Standard conditions

When calculating capacity for designing AHU DX (Direct expansion) coil, refer to standard conditions below.

It is recommended to keep nominal capacity within 90%-110% under the standard condition.

<Standard conditions>

[1] COOLING

Evaporation temp.	10°C
Superheat at evaporator outlet	5°C
Expansion valve inlet temp.	40°C
Coil on air temp. (dry-bulb/wet-bulb)	27°C/19°C
Outdoor temp. (dry-bulb/wet-bulb)	35°C/27°C

[2] HEATING

Condensing temp.	45°C
Superheat at condenser inlet	20°C
Subcool at condenser outlet	5°C
Coil on air temp. (dry-bulb/wet-bulb)	20°C/15°C
Outdoor temp. (dry-bulb/wet-bulb)	7°C/6°C

<Nominal capacity>

Model capacity of outdoor unit	ZRP	35	50	60	71	100	125	140	200	250
	P	—	—	—	—	—	—	—	200	250
	SHW	—	—	—	80	112	140	—	230	—
	ZM	35	50	60	71	100	125	140	—	—
COOLING (kW)		3.5	5.0	6.0	7.1	10.0	12.5	14.0	20.0	25.0
HEATING (kW)		4.1	6.0	7.0	8.0	11.2	14.0	16.0	22.4	27.0

6 Requirement on local AHU design

6.3 Requirement on DX (Direct expansion) coil

(1) Heat exchanger volume of DX coil

Make sure to keep the DX coil capacity within the following range.

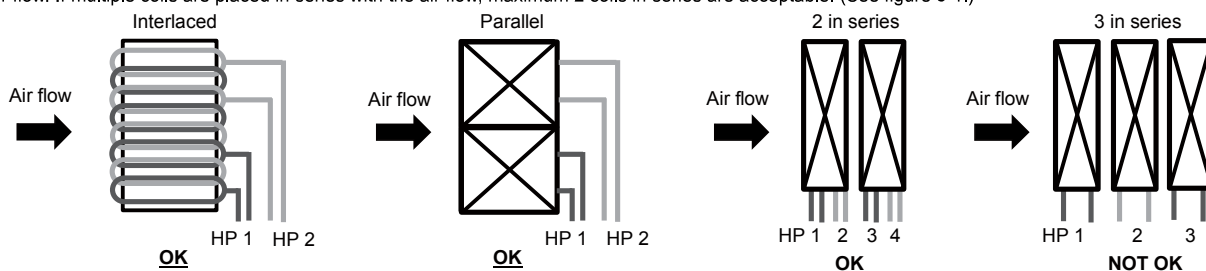
If the piping length is 30m or shorter, DX coil capacity can be increased as follows.

Model capacity of outdoor unit	ZRP	35	50	60	71	100	125	140	200	250
	P	—	—	—	—	—	—	—	200	250
	SHW	—	—	—	80	112	140	—	230	—
	ZM	35	50	60	71	100	125	140	—	—
Max. volume [cm ³]										
Pipe length	30m -	1050	1500	1800	2130	3000	3750	4200	6000	7500
	20m	1350	1800	2700	3030	3900	4650	5100	7800	9300
	10m	1650	2100	3600	3930	4800	5550	6000	9600	11100
Min. volume [cm ³]		350	500	600	710	1000	1250	1400	2000	2500

Note: Calculate them by linear interpolation in case of other piping lengths not shown on this table.

(2) Structure of DX coil

When multiple outdoor units are connected, basically select one interlaced DX coil which has multiple refrigerant circuit, or multiple coil placed in parallel to the air flow. If multiple coils are placed in series with the air flow, maximum 2 coils in series are acceptable. (See figure 6-1.)



<Fig. 6-1: Example of DX coil structure>

(3) Diameter of header

With a bigger size header, the refrigerant flow velocity decreases and this disturbs the sufficient circulation of refrigerant oil. As a result, the refrigerant oil does not flow properly and could cause a serious damage of compressor.

Use the pipe whose outside diameter is less than the value shown in the table below.

Model capacity of outdoor unit	ZRP	35	50	60	71	100	125	140	200	250
	P	—	—	—	—	—	—	—	200	250
	SHW	—	—	—	80	112	140	—	230	—
Max. diameter of header [mm]		φ19					φ28			
Model capacity of outdoor unit	ZM	35	50	60	71	100	125	140		
Max. diameter of header [mm]		φ14					φ21			

(4) Withstanding pressure

Design pressure of outdoor unit is 4.15 MPa. Following must be satisfied for burst pressure of connecting application.

Burst pressure : More than 12.45 MPa (3 times more than design pressure)

(5) Contamination maintenance

1. Wash the inside of heat exchanger to keep it clean. Be sure to rinse not to leave flux. Do not use chlorine detergent when washing.
2. Be sure that the amount of contamination per unit cubic content of heat transfer pipe is less than the following amount.

Example) In case of ø9.52mm

Residual water : 0.6 mg/m, Residual oil : 0.5 mg/m, Solid foreign object : 1.8 mg/m

6.4 Additional refrigerant charging amount

Regarding additional refrigerant charging amount of PUZ-ZM100, 125, 140 models, follow the table below.

For other models, see the installation manual of each outdoor unit.

Model	Permitted pipe length	Permitted vertical difference	Additional refrigerant charging amount					◎ Maximum amount of refrigerant
			31 - 40m	41 - 50m	51 - 60m	61 - 70m	71 - 85m	
ZM100 - 140	~ 85m	~ 30m	0.5kg	1.0kg	1.5kg	2.0kg	2.8kg	6.8kg