Manual No. '11 • PAC-T-160

MHI

THCHNICAL MANUAL

HYPER INVERTER PACKAGED AIR-CONDITIONERS

(Split system, Air to air heat pump type)

FLOOR STANDING TYPE

Single type

- Single phase use
  - FDF71VNXVD
  - 100VNXVD
  - 125VNXVD
  - 140VNXVD
- 3 phase use
  - FDF100VSXVD
  - 125VSXVD
  - 140VSXVD

Twin type

- Single phase use
  - FDF140VNXPVD
- 3 phase use
  - FDF140VSXPVD

MICRO INVERTER PACKAGED AIR-CONDITIONERS

(Split system, Air to air heat pump type)

FLOOR STANDING TYPE

Single type

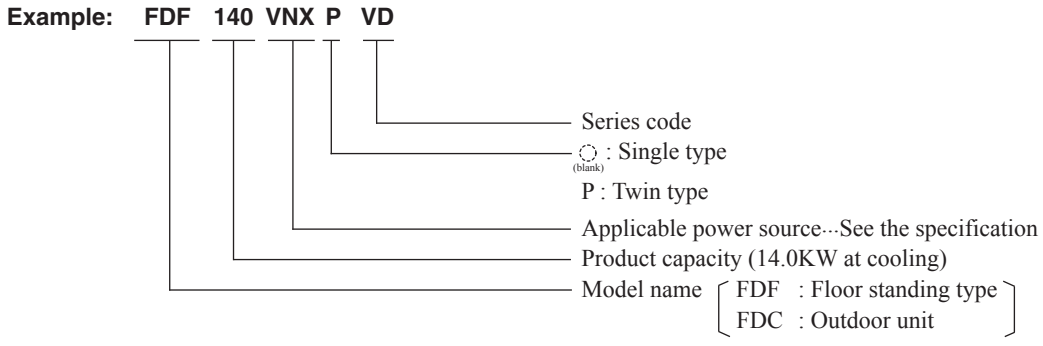
- Single phase use
  - FDF100VNVD
  - 125VNVD
  - 140VNVD
- 3 phase use
  - FDF100VSVD
  - 125VSVD
  - 140VSVD

Twin type

- Single phase use
  - FDF140VNPVD
- 3 phase use
  - FDF140VSPVD
  - 200VSPVD
  - 250VSPVD

MITSUBISHI HEAVY INDUSTRIES, LTD.

How to read the model name



Adapted to **RoHS** directive

Item \ Model		FDF200VSPVD	
		Indoor unit **FDF100VD (2 units)**	Outdoor unit **FDC200VS**
Power source			380-415V 3N~50Hz / 380V 3N~60Hz
Operation data		Cooling	Heating
Nominal capacity	kW	20.0 [7.0 (Min.)~22.4 (Max.)]	22.4 [7.6 (Min.)~25.0 (Max.)]
Power consumption	kW	6.50	6.42
Running current	A	9.6 / 10.1	9.5 / 10.0
Power factor	%	98	98
Inrush current	A	5 < Max.running current 19 >	
Sound Pressure Level	dB(A)	P-Hi : 54 Hi : 50 Me : 48 Lo : 44	57
Exterior dimensions Height x Width x Depth	mm	1,850 × 600 × 320	1,300 × 970 × 370
Exterior appearance (Munsell color)		Ceramic White (N8.0) near equivalent	Stucco White (4.2Y7.5/1.1) near equivalent
Net weight	kg	52	122
Refrigerant equipment			
Compressor type & Q'ty		—	GTC5150ND70K × 1
Starting method		—	Direct line start
Refrigerant oil	·	—	1.45 M-MA32R
Heat exchanger		Louver fine & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control		—	Electronic expansion valve
Air handling equipment			
Fan type & Q'ty		Centrifugal fan × 1	Propeller fan × 2
Motor <Starting method>	W	157 < Direct line start >	86 × 2 < Direct line start >
Air flow(Standard)	CMM	P-Hi : 29 Hi : 26 Me : 23 Lo : 19	Cooling : 150, Heating : 145
External static pressure	Pa	0	—
Outside air intake		Not possible	—
Air filter, Q'ty		Plastic net × 1 (Washable)	—
Shock & vibration absorber		Rubber sleeve (for fan motor)	Rubber sleeve (for Compressor)
Insulation (noise & heat)		Polyurethane form	—
Electric heater	W	—	33 (Crank case heater)
Remote controller		RC-E4 Installed / wireless : RCN-KIT3-E (option)	
Room temperature control		Thermostat by electronics	—
Safety equipment		Overload protection for fan motor Frost protection thermostat	Internal thermostat for fan motor Abnormal discharge temperature protection.
Installation data	mm	Liquid line: I/U ϕ9.52 (3/8") ②ϕ9.52 (3/8") × 0.8 ①ϕ9.52 (3/8") × 0.8 O/Uϕ9.52 (3/8")	
Refrigerant piping size		Gas line: I/U ϕ15.88 (5/8") ②ϕ15.88 (5/8") × 1.0 ①ϕ22.22 (7/8") × 1.0 O/U ϕ22.22 (7/8")	
Connecting method		Flare piping	Liquid : Flare / Gas : Brazing
Refrigerant line (one way) length		Max.70m	
Vertical height difference between outdoor unit and indoor unit		Max.30m (Outdoor unit is higher) Max.15m (Outdoor unit is lower)	See page 43
Refrigerant Quantity		R410A 5.4kg (Pre-charged up to the piping length of 30m) Outdoor unit	
Drain pump		—	—
Drain		Hose Connectable with VP20	Holes size ϕ20 × 3pcs
Insulation for piping		Necessary (both Liquid & Gas lines)	
Standard Accessories		Mounting kit	Connecting pipe, Edging

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature	
Operation	DB	WB	DB	WB
Cooling	27°C	19°C	35°C	24°C
Heating	20°C		7°C	6°C

(2) This packaged air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound pressure level indicates the value in an anechoic chamber. During operation these value are somewhat higher due to ambient temperature.
(4) The operation data indicates when the air-conditioner is operated at 400V50Hz or 380V60Hz.
(5) Indoor unit specifications for one unit. Capacity and operation data is two indoor units are combined and run together.
(6) Branching pipe set "DIS-WB1" × 1(option). ①: Pipe of O/U~Branch, ②: Pipe of Branch~I/U
(7) If wireless remote controller is used, only 3-speed fan setting (Hi-Me-Lo) is available.

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Model FDF200VSPVD Indoor unit FDF100VD (2 units) Outdoor unit FDC200VS

Cool Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃CWB		14℃CWB		16℃CWB		18℃CWB		19℃CWB		20℃CWB		22℃CWB		24℃CWB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					17.37	14.52	18.41	15.69	18.94	15.58	19.50	15.47	20.63	16.34	21.76	16.06
13					17.90	14.74	18.99	15.92	19.54	15.80	20.13	15.69	21.31	16.57	22.49	16.28
15					18.43	14.97	19.57	16.14	20.14	16.03	20.75	15.92	21.98	16.79	23.21	16.50
17					18.96	15.19	20.14	16.37	20.73	16.25	21.38	16.15	22.66	17.02	23.94	16.72
19					19.35	15.36	20.56	16.54	21.16	16.42	21.81	16.31	23.12	17.18	24.42	16.87
21					19.41	15.39	20.98	16.71	21.59	16.59	22.25	16.47	23.57	17.33	24.89	17.02
23					19.31	15.35	20.86	16.66	21.47	16.54	22.12	16.42	23.43	17.28	24.73	16.97
25			17.35	15.35	19.20	15.30	20.74	16.61	21.35	16.49	21.99	16.38	23.28	17.23	24.57	16.92
27			17.28	15.32	19.10	15.25	20.62	16.56	21.22	16.44	21.83	16.32	23.04	17.15		
29			17.14	15.25	18.85	15.15	20.31	16.44	20.92	16.33	21.53	16.21	22.75	17.05		
31			16.99	15.19	18.59	15.04	20.00	16.31	20.61	16.21	21.22	16.09	22.45	16.95		
33	16.46	14.38	17.03	15.20	18.33	14.93	19.69	16.19	20.31	16.09	20.92	15.98	22.15	16.85		
35	16.14	14.23	16.76	15.08	18.08	14.82	19.38	16.07	20.00	15.98	20.62	15.87	21.85	16.75		
37	15.86	14.09	16.50	14.96	17.76	14.68	18.98	15.91	19.57	15.81	20.17	15.71	21.35	16.58		
39	15.59	13.96	16.23	14.84	17.44	14.55	18.58	15.76	19.15	15.66	19.71	15.54	20.85	16.42		
41	15.32	13.83	15.97	14.73	17.13	14.42	18.17	15.60	18.72	15.50	19.26	15.38	20.35	16.25		
43	15.04	13.69	15.70	14.60	16.81	14.29	17.77	15.44	18.29	15.34	18.81	15.22	19.85	16.09		

Heat Mode (kW)

Outdoor air temp.		Indoor air temperature ℃CDB				
℃CDB	℃CWB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	13.21	13.18	13.14	13.11	13.08
-11.5	-12	13.91	13.87	13.83	13.79	13.76
-9.5	-10	14.61	14.57	14.52	14.47	14.43
-7.5	-8	15.31	15.26	15.21	15.16	15.10
-5.5	-6	15.64	15.58	15.52	15.46	15.40
-3.0	-4	15.96	15.89	15.82	15.76	15.69
-1.0	-2	16.29	16.21	16.13	16.06	15.98
1.0	0	16.61	16.53	16.44	16.36	16.28
2.0	1	16.78	16.69	16.59	16.51	16.42
3.0	2	17.96	17.86	17.76	17.66	17.56
5.0	4	20.33	20.21	20.08	19.96	19.84
7.0	6	22.71	22.55	22.40	22.26	22.12
9.0	8	23.43	23.28	23.13	22.88	22.63
11.5	10	24.14	24.00	23.86	23.50	23.13
13.5	12	25.41	25.24	25.07	24.77	24.43
15.5	14	26.67	26.47	26.27	26.05	25.72
16.5	16	27.30	27.09	26.87	26.69	26.37

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Model FDF250VSPVD Indoor unit FDF125VD (2 units) Outdoor unit FDC250VS

Cool Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃CWB		14℃CWB		16℃CWB		18℃CWB		19℃CWB		20℃CWB		22℃CWB		24℃CWB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					21.71	16.40	23.02	17.54	23.67	17.40	24.38	17.28	25.79	18.10	27.21	17.76
13					22.38	16.70	23.74	17.84	24.42	17.70	25.16	17.58	26.63	18.40	28.11	18.05
15					23.04	17.00	24.46	18.14	25.17	18.01	25.94	17.88	27.48	18.70	29.02	18.35
17					23.70	17.30	25.18	18.45	25.92	18.31	26.72	18.19	28.32	19.01	29.92	18.65
19					24.19	17.53	25.70	18.67	26.45	18.53	27.27	18.40	28.89	19.22	30.52	18.85
21					24.26	17.56	26.22	18.90	26.99	18.76	27.82	18.63	29.47	19.43	31.12	19.05
23					24.13	17.50	26.07	18.83	26.84	18.69	27.65	18.56	29.28	19.36	30.91	18.98
25			21.69	17.40	24.00	17.44	25.92	18.77	26.68	18.63	27.49	18.49	29.10	19.29	30.71	18.91
27			21.60	17.36	23.88	17.38	25.77	18.70	26.53	18.57	27.29	18.41	28.80	19.18		
29			21.42	17.27	23.56	17.24	25.39	18.54	26.15	18.41	26.91	18.26	28.43	19.05		
31			21.24	17.18	23.24	17.09	25.00	18.37	25.77	18.25	26.53	18.11	28.06	18.91		
33	20.58	16.47	21.29	17.21	22.92	16.94	24.61	18.21	25.38	18.09	26.15	17.96	27.69	18.78		
35	20.17	16.25	20.96	17.05	22.60	16.80	24.23	18.05	25.00	17.94	25.77	17.81	27.31	18.64		
37	19.83	16.08	20.62	16.88	22.20	16.62	23.73	17.84	24.47	17.72	25.21	17.60	26.69	18.42		
39	19.49	15.90	20.29	16.73	21.80	16.44	23.22	17.62	23.93	17.51	24.64	17.38	26.06	18.20		
41	19.15	15.73	19.96	16.57	21.41	16.27	22.72	17.42	23.40	17.29	24.08	17.16	25.43	17.97		
43	18.81	15.56	19.63	16.41	21.01	16.09	22.22	17.21	22.86	17.08	23.51	16.94	24.81	17.76		

Heat Mode (kW)

Outdoor air temp.		Indoor air temperature ℃CDB				
℃CDB	℃CWB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	16.52	16.47	16.43	16.39	16.35
-11.5	-12	17.39	17.34	17.29	17.24	17.19
-9.5	-10	18.26	18.21	18.15	18.09	18.04
-7.5	-8	19.14	19.07	19.01	18.94	18.88
-5.5	-6	19.55	19.47	19.40	19.32	19.24
-3.0	-4	19.95	19.87	19.78	19.70	19.61
-1.0	-2	20.36	20.26	20.17	20.07	19.98
1.0	0	20.77	20.66	20.55	20.45	20.35
2.0	1	20.97	20.86	20.74	20.64	20.53
3.0	2	22.45	22.32	22.19	22.07	21.95
5.0	4	25.42	25.26	25.10	24.95	24.80
7.0	6	28.38	28.19	28.00	27.82	27.65
9.0	8	29.28	29.10	28.91	28.60	28.28
11.5	10	30.18	30.00	29.83	29.37	28.91
13.5	12	31.76	31.55	31.33	30.97	30.53
15.5	14	33.34	33.09	32.84	32.57	32.15
16.5	16	34.13	33.86	33.59	33.37	32.96

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Note(1) These data show average status.
Depending on the system control, there may be ranges where the operation is not conducted continuously.
These data show the case where the operation frequency of a compressor is fixed.
(2) Capacities are based on the following conditions.
Corresponding refrigerant piping length :7.5m
Level difference of Zero.
(3) Symbols are as follows
TC :Total cooling capacity (kW)
SHC :Sensible heat capacity (kW)