Hyper-Heating INVERTER

Bringing year-round comfort solutions to extreme climates.

MITSUBISHI ELECTRIC
HVAC Advanced Products Division

The heat pump as you knew it is history.

Introducing Hyper-Heating INVERTER (H2i™) technology*, exclusively from Mitsubishi Electric and available in select Mr. Slim® Split-ductless and CITY MULTI® VRFZ models. The cooling and heating success of our INVERTER heat pump systems is well documented. But we didn't stop there. We decided to redefine the heat pump even more.

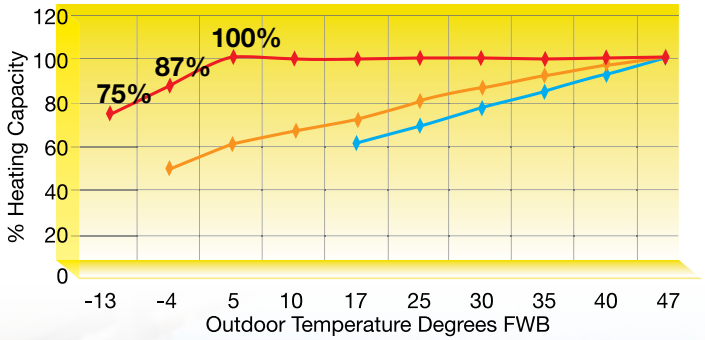
Imagine sitting toasty warm inside while it's -13˚ F outside or realizing full heating capacity at 5˚ F outdoor ambient. Now open your eyes and see the H2i outdoor units. **H2i delivers heat, and lots of it**.

With our INVERTER-driven heat pump systems you effectively use energy while maintaining the ideal comfort level. Now, with the integration of the innovative H2i technology, you experience the added benefit of year-round comfort with a single system, even on the coldest days of the year. This Mitsubishi exclusive technology comes appropriately at a time when fuel costs and energy usage are at an all time high.

- **Exceptional heating performance, even at 5˚ F outdoor**
- **Tremendous heating operation down to -13˚ F outdoor**
- **Extended comfort performance, longer interval between defrost time provides more than four hours of heating in one continuous cycle**

Hyper-Heating Inverter vs. Other Units

% Heating Capacity vs. Outdoor Temperature



Mitsubishi Electric Hyper-Heating Inverter (H2i™)
Mitsubishi Electric Y-Series
Typical Unitary Equipment Performance

Does not include correction factor for defrost

Bringing year-round comfort

Warm Air Quickly!

On start up a special circuit assures that normally dormant refrigerant quickly enters the air-conditioning cycle. This process rapidly increases the mass flow rate in the system, which quickly provides comfortable discharge temperatures from the indoor units.

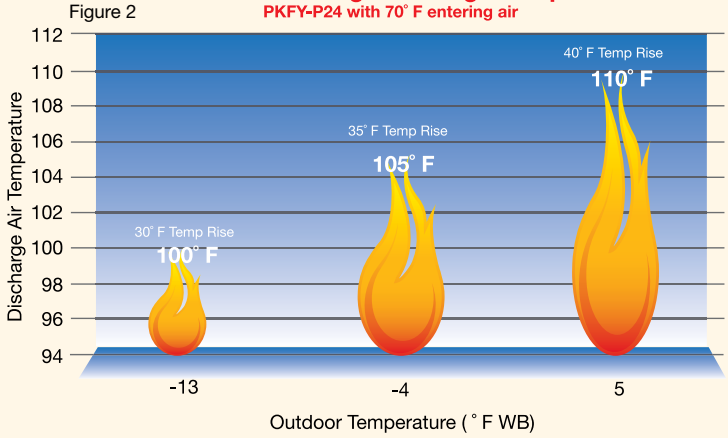
Even at -13˚ F outdoor temperature the H2i system can provide 100˚ F discharge air temperature from the indoor unit. And at 5˚ F outdoor temperature and above, the discharge temperature reaches an impressive 110˚ F with a 40˚ F temperature rise. (see Figure 2)

What does that mean? A comfortable climate in all of the zones in a home or office, whether heating or cooling, no matter the season.

Figure 2

Indoor Unit Heating Discharge Temperature

PKFY-P24 with 70˚ F entering air



The Technology Behind the Unequaled Comfort

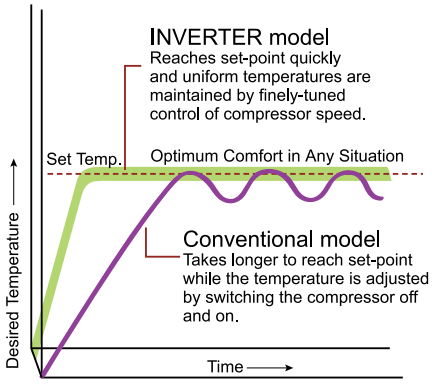
The Hyper-Heating INVERTER outdoor unit uses flash technology which re-collects heat energy that is normally wasted in the flash process at the outdoor coil. This process helps the H2i systems overcome issues commonly associated with conventional heat pumps such as decreases in low-side pressure, refrigerant mass flow rate and operational capacity.

The patent pending flash process cools the compressor allowing higher speeds at a lower outdoor temperature without overheating. This also allows increase in mass flow rate in the system providing phenomenal heating performance at low temperatures.

Continuous Comfort!

Unlike typical fixed-speed or staged heat pumps, the INVERTER-driven compressor in the H2i outdoor unit adjusts its speed to precisely match the load requirements within each zone. The use of the INVERTER-driven compresssor allows for constant comfort all year long, year after year.

INVERTER Technology	Conventional Technology
Precise rotation speed control provides comfortable, consistent room temperature	Has uncomfortable temperature fluctuation
High rotation speed provides fast cooling and heating	Requires a long time to reach desired temperature
Low rotation speed keeps starting current low, which means less energy consumed	Need heavy energy usage every time compressor turns on



INVERTER-driven Scroll Compressor

solutions to extreme climates

*Patent Pending

CITY MULTI® Y-Series H2i™

Setting a New Standard in Performance

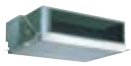
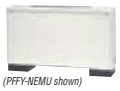
The Hyper-Heating INVERTER Y-Series combines the ultimate in application flexibility and powerful cooling and heating capabilities to deliver precise comfort control to multiple zones of a commercial or institutional building. The outdoor units deliver full-sized performance from a more compact, space-saving design. A compact design equates to easier transportation and installation. The INVERTER-driven scroll compressor delivers the precise amount of comfort to the zones as required. Now with its expanded heating capabilities, the CITY MULTI H2i Y-Series provides year-round comfort even in extreme climates.

Expand the Possibilities

The H2i Y-Series is available in four capacities, six, eight, 12, and 16 tons, and each provides distributed capacity to multiple indoor units. The six-ton model (P72) connects to up to 13 indoor units and the eight-ton (P96) connects to up to 16. When you simply manifold two outdoor units you expand not only the capacity but the connectable indoor units. The 12-ton H2i system consists of two manifolded P72's connected to up to 22 indoor units and the 16-ton system consists of two manifolded P96's connected to up to 24 indoor units.

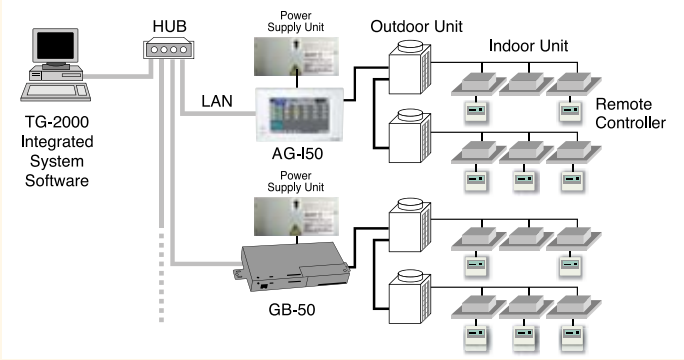
Indoor Units

CITY MULTI VRFZ systems offer many sleek styles of ductless and ducted indoor units for various applications. They are easy to install and offer flexible zoning options. Choose from wall-mounted; ceiling-recessed (1- or 4-way airflow), suspended and concealed, and floor-standing models. And all are quiet, easy to maintain, and compatible with the H2i Y-Series outdoor units. Units range in capacity from 6,000 up to 96,000 Btu/h as listed below:

Capacity Code	Wall-mounted PKFY-P-N★MU-E	Ceiling-recessed Cassette PLFY-P-N★MU-E	Ceiling-recessed Cassette PMFY-P-NBMU-E	Ceiling-suspended PCFY-P-NGMU-E	Ceiling-concealed (ducted) PDFY-P-NMU-E	Ceiling-concealed (ducted low-profile) PEFY-P-NMLU-E	Ceiling-concealed (ducted alternate high-static) PEFY-P-NMSU-E	Floor-standing (exposed/concealed) PFFY-P-NEMU/NRMU-E	Vertical-concealed (ducted) PVFY-P-E00A
Nominal Btu/h								 (PFFY-NEMU shown)	
	6,000-30,000	8,000-36,000	6,000-15,000	15,000-36,000	6,000-48,000	6,000-12,000	15,000-96,000	6,000-24,000	12,000-54,000

CITY MULTI Controls Network

The CMCN manages up to 2,000 indoor units from a single networked PC in terms of operation, monitoring, scheduling (daily, weekly and yearly), error code email, personal web browser, tenant billing and maintenance diagnostic information. The CMCN places individual comfort of personalized comfort in the hands of the tenant and the building manager. Several styles of remote, system and central controllers are available to provide a wide range of control. Not only can our CMCN act as a stand-alone building management system, it can also integrate with existing Building Management Systems via LonWorks® or BACnet® interfaces.



Features	Benefits
Advanced Technology	75% heating capacity down to -13˚ F outdoor temperature and 100% capacity at 5˚ F
Compact Size	Smaller footprint
Zoned Cooling and Heating System	A system that provides maximum comfort while effectively using energy.
Quiet Operation	Perfect for sound-sensitive applications like hotel rooms, schools, and libraries.
Easy Installation	Minimal or no duct work, simple controls wiring, and two-pipe configuration means less labor and materials used and a fast track to personalized comfort.
Ductless or Ducted	Versatile locations and applications for indoor units.

INVERTER R410A

CITY MULTI Y-Series H2i™

Product Specifications

Model Name			PUHY-HP72THMU-A (-BS)	PUHY-HP96THMU-A (-BS)	PUHY-HP144TSHMU-A (-BS) *2 With 2 PUHY-HP72THMU-A (-BS)	PUHY-HP192TSHMU-A (-BS) *2 With 2 PUHY-HP96THMU-A (-BS)
Power Source			208/230V, 3-Phase, 60Hz			
Capacity *1	Cooling	Btu/h	72,000	96,000	144,000	192,000
		kW	5.90	8.73	12.15 *3	17.98 *3
		A	18.2-16.5	27.0-24.4	37.5-33.9 *3	55.5-50.2 *3
	Heating	Btu/h	80,000	108,000	160,000	216,000
		kW	6.28	9.13	12.94 *3	18.81 *3
		A	19.4-17.6	28.2-25.5	40.0-36.1 *3	58.1-52.5 *3
Fan	Type x Quantity		Propeller Fan x 1		Refer to PUHY-HP72THMU-A (-BS) Specifications	Refer to PUHY-HP96THMU-A (-BS) Specifications
	Airflow Rate	CFM	7,950			
	Motor Output	kW	0.92			
Compressor	Type		Inverter-driven Scroll Hermetic			
	Motor Output	kW	5.3	6.7		
	Crankcase Heater	W	57			
	Lubricant		MEL32			
Refrigerant	Type		R410A			
External Finish			Pre-coated Galvanized Sheets (Plus Powder-coating for -BS types) <Munsell No. 5Y 8/1 or Similar>			
Dimensions	Height	In.	65			
	Width	In.	36-1/4			
	Depth	In.	29-15/16			
Net Weight		Lbs.	486			
Sound Pressure Level (As Measured in an Anechoic Room)		dB(A)	56 (61 in Heating at -5° F Outdoor Temperature)	57 (62 in Heating at -5° F Outdoor Temperature)	59 (64 in Heating at -5° F Outdoor Temperature)	60 (65 in Heating at -5° F Outdoor Temperature)
Protection Devices	High Pressure Protection		High-pressure Sensor, High-pressure Switch			
	Compressor/Fan		Discharge Thermo, Overcurrent Protection			
	Inverter		Overheat and Overcurrent Protection, Thermal Switch			
Refrigerant Pipe Dimensions	Low Pressure	In.	3/4 (Brazed + Flare)	7/8 (Brazed)	3/4 (Brazed + Flare) *2	7/8 (Brazed) *2
	High Pressure	In.	1/2 (Brazed + Flare)		3/8 (Brazed + Flare) *2	3/8 (Brazed + Flare) *2
Indoor Unit	Total Capacity		50 to 130% of Outdoor Unit Capacity			
	Quantity		P06-P96/1-13	P06-P96/1-16	P06-P96/1-22	P06-P96/1-24
Operating Temperature Range	Cooling		Outdoor: 23° F D.B. to 109° F D.B.			
	Heating		Outdoor: -13° F W.B. to +60° F W.B.			

*1 Rating conditions (cooling)-Indoor: D.B. 26.7° C (80° F), W.B. 19.4° C (67° F); Outdoor: D.B. 35° C (95° F).
Rating conditions (heating)-Indoor: D.B. 21.1° C (70° F); Outdoor: D.B. 8.3° C (47° F), W.B. 6.1° C (43° F).
*2 Twinning Kit CMY-Y100VBK2 is required for combining two individual outdoor units in the field for PUHY-HP-TSHMU combined systems. Piping dimensions from the Twinning Kit to the Indoor Units are High Pressure: 5/8 In. Brazed; Low Pressure: 1-1/8 In. Brazed.
*3 Each individual outdoor unit requires a separate electrical connection. Reference electrical data for each individual outdoor unit.

-BS indicates Seacoast Protection option.

LIMITED WARRANTY | Five-year warranty on compressor. One-year warranty on parts.
Specifications are subject to change without notice.

Mr. Slim® P-Series H2i™

The Hyper-Heating INVERTER Mr. Slim P-Series models add greater-performance dimensions to our leading product line by providing the extra level of heat needed to give you comfort in extreme climates.

The 3-ton wall-mounted or ceiling-recessed indoor units connected to the H2i P-Series outdoor units are flexible enough to satisfy almost any light commercial or institutional renovation or new construction project. These systems employ our INVERTER-driven scroll compressor technology to ensure that room temperature is reached more quickly and desired comfort level is maintained consistently, while conserving energy. And with the integration of Mitsubishi Electric's exclusive innovative flash technology, **these models exhibit 100% of rated heating capacity at 5˚ F and 87% at -4˚ F outdoor ambient.**

Air-conditioning down to 0˚ F outdoor ambient is possible, with the addition of a wind baffle, for those applications where you need to cool a space even when it is below freezing outside, like in computer or mechanical rooms, and kitchens. **Whether cooling or heating, the H2i P-Series gives you the flexibility to temper extreme outdoor temperatures.**

Indoor Units:

PK

The PK indoor unit is a compact and quiet wall-mounted unit that delivers exceptional cooling and heating performance.

- Hard-wired, wall-mounted, remote controller (-FA model) or wireless (-FAL model)
- Adjustable vane control
- Easy-clean filters

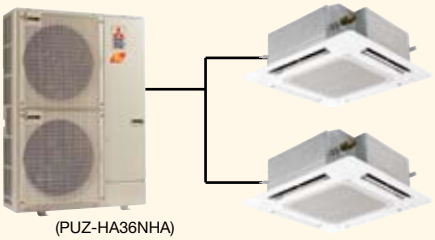
PL

PLA-A**-BA ceiling-recessed indoor units offer increased application flexibility and ease of installation especially in tight spaces.

- Independent vane motor control: five fixed settings plus swing
- Auto wave airflow in heating mode—unit independently cycles through all vertical positions for a more even heat distribution
- Built-in drain lift mechanism for condensate removal; lifts up to 33-7/16 in.
- Optional i-see™ sensor accessory

Two in One

If you have a large space, such as a long room or hallway, which would be considered one zone, two indoor units can be connected to the 36,000 Btu/h outdoor unit to cool or heat the space and provide the maximum amount of comfort. This process is called Twinning, two indoor units acting as one to spread the outdoor unit capacity over a large area.



(PUZ-HA36NHA)

Features	Benefits
Advanced Technology	Cooling and heating capabilities down to 0˚ F outdoor temperature
INVERTER Technology	You can enjoy high-speed cooling and heating and consistent delivery of comfort year-round.
Quiet Operation	You can hold a meeting or teach a class in quiet comfort.
No Ductwork	There is no need to shut down for major construction because installation is quick and easy.
Zone Control	You can cool and heat only those spaces desired for maximum control and energy efficiency.
Environmentally Friendly	Mr Slim systems use environmentally-friendly refrigerants.
Auto restart following a power outage	Providing an additional level of piece-of-mind for ease of use
Auto cool/heat changeover	Set the desired temperature and let Mr. Slim switch from cooling to heating for hands free comfort control

Heating Performance at Low Temperatures

PUZ-HA30NHA

COP	PK	PL
47˚ F	2.71	2.73
17˚ F	1.67	1.64
5˚ F	1.47	1.41

PUZ-HA36NHA

COP	PK	PL
47˚ F	3.59	3.45
17˚ F	2.10	2.10
5˚ F	1.90	1.90

Mr. Slim P-Series H2i™

Product Specifications

INVERTER R410A

FA = Wired Controller; FAL = Wireless Controller

Model Name	Indoor Unit		PKA-A30FA(L)	PKA-A36FA(L)	PLA-A30BA	PLA-A36BA
	Outdoor Unit		PUZ-HA30NHA	PUZ-HA36NHA	PUZ-HA30NHA	PUZ-HA36NHA
Cooling *1	Rated Capacity	Btu/h	30,000	34,200	30,000	36,000
	Capacity Range	Btu/h	18,000-30,000	18,000-34,200	18,000-30,000	18,000-36,000
	Total Input	W	2,730	2,950	2,450	3,120
	Energy Efficiency	SEER	14.5	16.0	15.6	16.0
	Moisture Removal	Pints/h	7.9	7.1	7.2	6.8
	Sensible Heat Factor		0.70	0.77	0.73	0.79
Heating at 47° F *2	Rated Capacity	Btu/h	32,000	38,000	32,000	38,000
	Capacity Range	Btu/h	18,000-34,000	18,000-40,000	18,000-34,000	18,000-40,000
	Total Input	W	3,460	3,100	3,440	3,230
	HSPF (IV)	Btu/h/W	8.9	9.4	8.8	9.4
Heating at 17° F *3	Capacity	Btu/h	32,000	38,000	32,000	38,000
	Total Input	W	5,600	5,300	5,720	5,300
Heating at 5° F *4	Capacity	Btu/h	32,000	38,000	32,000	38,000
	Total Input	W	6,370	5,860	6,630	5,860
Power Supply	Phase, Cycle, Voltage		1-Phase, 60Hz, 208 / 230V		1-Phase, 60Hz, 208 / 230V	
	Breaker Size	A	30		30	
Voltage	Indoor - Outdoor S1 - S2		AC 208 / 230V		AC 208 / 230V	
	Indoor - Outdoor S2 - S3		DC24V		DC24V	
	Indoor - Remote Controller		DC12V: For Wired Controller (FA)		DC12V	
Indoor Unit	MCA	A	1.0		1.0	2.0
	Fan Motor	F.L.A.	0.43	0.52	0.51	1.00
	Fan Motor Output	W	45	70	50	120
	Airflow	DRY (CFM)	530-705 (Lo-Hi)	780-990 (Lo-Hi)	490-570-640-740 (Lo-M1-M2-Hi)	710-810-920-1,060 (Lo-M1-M2-Hi)
		WET (CFM)	480-635 (Lo-Hi)	700-890 (Lo-Hi)	460-530-600-710 (Lo-M1-M2-Hi)	670-770-880-1,030 (Lo-M1-M2-Hi)
	Sound Pressure Level	dB(A)	39-45 (Lo-Hi)	46-49 (Lo-Hi)	28-30-32-34 (Lo-M1-M2-Hi)	32-34-37-40 (Lo-M1-M2-Hi)
	External Finish Color	Munsell No.	3.4Y 7.7/0.8		Grille: 6.4Y 8.9/0.4	
	Dimension Unit	W: In.	55-1/8	66-1/8	33-1/16 (Grille: 37-3/8)	
		D: In.	9-1/4		33-1/16 (Grille: 37-3/8)	
		H: In.	13-3/8		10-3/16 (Grille: 1-3/8)	11-3/4 (Grille: 1-3/8)
	Weight Unit	Lbs.	53	62	55 (Grille: 13)	
	Drain Lift Mechanism (Included)	H: In.	N/A		33-7/16	
	Field Drainpipe Size	In.	I.D.: 13/16		O.D.: 1-1/4	
Outdoor Unit	MCA	A	28		28	
	MOCP	A	40		40	
	Fan Motor	F.L.A.	0.4 + 0.4		0.4 + 0.4	
	Fan Motor Output	W	60 + 60		60 + 60	
	Compressor	Model	DC INVERTER-driven Scroll		DC INVERTER-driven Scroll	
		R.L.A.	18		18	
		L.R.A.	27.5		27.5	
	Airflow	CFM	3,530		3,530	
	Refrigerant Control		Electronic Expansion Valve		Electronic Expansion Valve	
	Defrost Method		Reverse Cycle		Reverse Cycle	
	Sound Pressure Level at Cooling *1	dB(A)	52		52	
	Sound Pressure Level at Heating *2	dB(A)	53		53	
	External Finish Color	Munsell No.	3Y 7.8/1.1		3Y 7.8/1.1	
	Dimensions	W: In.	37-3/8		37-3/8	
		D: In.	13 + 1-3/16		13 + 1-3/16	
		H: In.	53-1/8		53-1/8	
	Weight	Lbs.	267		267	
Remote Controller			Located with Indoor Unit		Located with Grille	
Refrigerant	Type		R410A		R410A	
	Charge	Lbs.	12		12	
	Oil	Type (fl. oz.)	FV50S (45)		FV50S (45)	
Refrigerant Pipe	Gas Side O.D.	In.	5/8		5/8	
	Liquid Side O.D.	In.	3/8		3/8	
Refrigerant Pipe Length	Height Difference (Max.)	Ft.	100		100	
	Length (Max.)	Ft.	245		245	
Connection Method			Flared		Flared	
Operating Temperature Range	Cooling		0° F D.B. to 115° F D.B. with Wind Baffle Accessory Installed			
	Heating		-13° F W.B. to +59° F W.B.			

Notes:
*1 Rating conditions (cooling)-Indoor: D.B. 26.7° C (80° F), W.B. 19.4° C (67° F); Outdoor: D.B. 35° C (95° F), W.B. 23.9° C (75° F).
*2 Rating conditions (heating)-Indoor: D.B. 21.1° C (70° F), W.B. 15.6° C (60° F); Outdoor: D.B. 8.3° C (47° F), W.B. 6.1° C (43° F).
*3 Rating conditions (heating)-Indoor: D.B. 21.1° C (70° F), W.B. 15.6° C (60° F); Outdoor: D.B. -8.3° C (17° F), W.B. -9.4° C (15° F).
*4 Rating conditions (heating)-Indoor: D.B. 21.1° C (70° F), W.B. 15.6° C (60° F); Outdoor: D.B. -15° C (5° F), W.B. -15° C (5° F).

LIMITED WARRANTY | Six-year warranty on compressor. One-year warranty on parts.
Specifications are subject to change without notice.

CITY MULTI® VRFZ TECHNOLOGY

Mr. SLIM® Split-ductless A/C and Heat Pumps

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Mitsubishi Electric Shizuoka Works acquired ISO 9001 certification under Series 9000 of the International Standard Organization (ISO), based on a review of quality warranties for the production of air-conditioning equipment. The plant also acquired environmental management system standard ISO 14001 certification.

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For more information visit www.mehvac.com