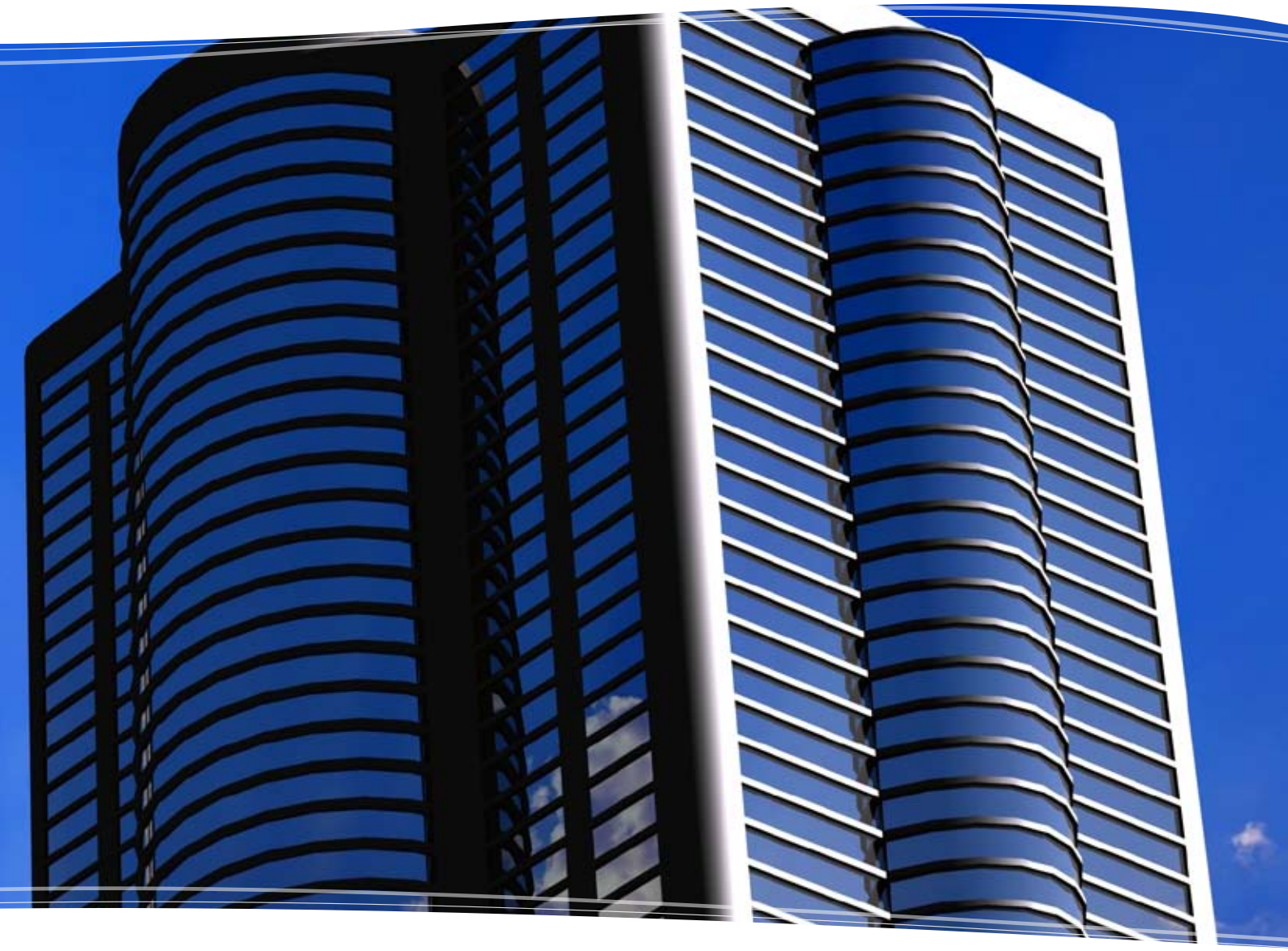
Think GAIA
For Life and the Earth

SANYO



Gas Driven VRF

M Series

GAS DRIVEN VRF
ELECTRIC VRF
COMMERCIAL SPLIT SYSTEMS
ROOM AIR CONDITIONERS
HEATING SOLUTIONS

SANYO Air Conditioners. The natural choice.

Gas Heat Pump M Series - the perfect solution when you're short of power

SANYO has been developing GHP VRF systems since 1980, during which time we have been committed to delivering ground-breaking technology. As a result, the commercial range of GHP VRF systems is leading the industry in the development of efficient and flexible systems, making them the natural choice for commercial projects, especially for those projects where power restrictions apply. As you would expect, all of our gas driven VRF systems have the highest reliability rates in the industry and a leading customer service programme.

The M Series of gas driven VRF systems offers increased efficiency and performance across the range. Now more powerful than ever before, it can connect to up to 48 indoor units.

Improvements include increased part load performance, reduced gas consumption with a Miller-cycle engine and reduced electrical consumption from using DC fan motors.

- Up to 71kW of cooling from a maximum running capacity of 5 AMPs
- Single phase power supply across the range
- The option of natural gas or LPG as its main power source
- Free hot water! A water heat exchanger to connect to domestic hot water systems 13-25 HP (Heat Pump only)
- Option of DX or chilled water for indoor heat exchange
- Option to connect to third party Air Handling Units
- Reduced CO_2 emissions

Power supply problems?

If you are short of electrical power, gas heat pump could be the perfect solution.

- Runs on gas and just needs single phase supply.
- Enables the building's electrical power supply to be used for other critical electrical demands.
- Reduces capital cost to upgrade power substations to run heating and cooling systems.
- Reduces power loadings within a building especially during peak periods.
- Electricity supply freed up for other uses such as IT servers, commercial refrigeration, manufacturing, lighting etc.

SANYO benefits

High-efficiency operation

13-25 HP models are equipped with a high-performance air exchanger and a newly developed refrigerant heat exchanger for high-efficiency operation, making them one of the most energy-efficient solutions on the market.

Lowest nitrogen oxide emissions

The GHP VRF systems have the lowest nitrogen oxide emissions, 66% below the standard. In a pioneering development, the SANYO GHP features a brand new lean-burn combustion system that utilises air fuel ratio feedback control to reduce NOx emissions to an all-time low.

Excellent economy

The SANYO GHP provides quick and powerful cooling/heating and increases delivery of heat into the space by the efficient recovery of heat from the engine cooling water, which is injected into the refrigerant circuit.

In addition, the use of engine waste heat ensures that our gas heat pump air conditioner requires no defrost cycle, therefore providing continuous 100% heating performance in severe weather conditions with an outside air temperature as low as -20°C. During cooling mode the rejected heat from the engine is available for use within a hot water system and can supply up to 25kW of hot water at 75 °C.

High performance

With its advanced heat exchanger design, this new GHP system offers improved efficiency and reduced running costs, which, coupled with improved engine management systems, have greatly improved the system COP rating.

New electrical power generator model

The biggest breakthrough in recent GHP technology is the launch of the ECO G Power, which provides 4.0kW of power. That's enough electricity to power 8 computers or other applications.

GHP features at a glance

- Power generation of up to 4kW on ECO G Power version
- Up to 25kW hot water generation on all 2 pipe heat pump versions
- Chiller module available for water based solutions
- 100% heating performance even at -20°c ambient
- 180% indoor connectability (Single heat pump module)
- Single phase power required through the range

Rating Conditions: Cooling Indoor 27°C DB 19°C WB Outdoor 35°C DB 24°C WB Heating Indoor 20°C DB Outdoor 7°C DB 6°C WB

The application principle of Variable Refrigerant Flow (VRF) systems for projects with multiple indoor unit is now very much an integral element of the UK air conditioning market place.

A GHP is no different in principle, however, developed by SANYO in 1980 the GHP outdoor unit is fitted with a combustion engine, powered by Natural gas or LPG, to drive the refrigerant compressor.

Variable capacity is achieved via the engine speed being altered up and down just as an inverter compressor speed is controlled in the electric VRF equivalent. The GHP therefore is an ideal solution where electrical power is at a premium (or no 3 phase available) however it also boasts a number of additional benefits/functions that are not available on an electric equivalent.

High efficiency heat exchanger

The 'M' series GHP continues to use a 'hybrid' heat exchanger for improved efficiency. By interlacing the refrigerant coil with the radiator carrying the coolant from the engine, the condensing capacity and radiator performance is balanced to an optimum level. This combination ensures the cooling efficiency drop in cold ambient is kept to a minimum, heating performance is down to -20°c and maintain a high COP.

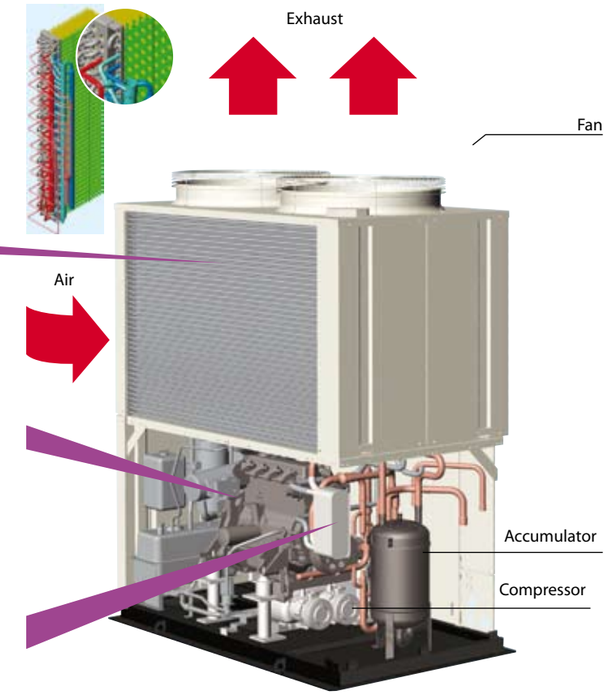
Higher engine efficiency

By utilising a Miler-Cycle engine, the compression stroke is reduced and therefore pumping losses are minimised. As a result the expansion volume ratio increases and the efficiency improves.

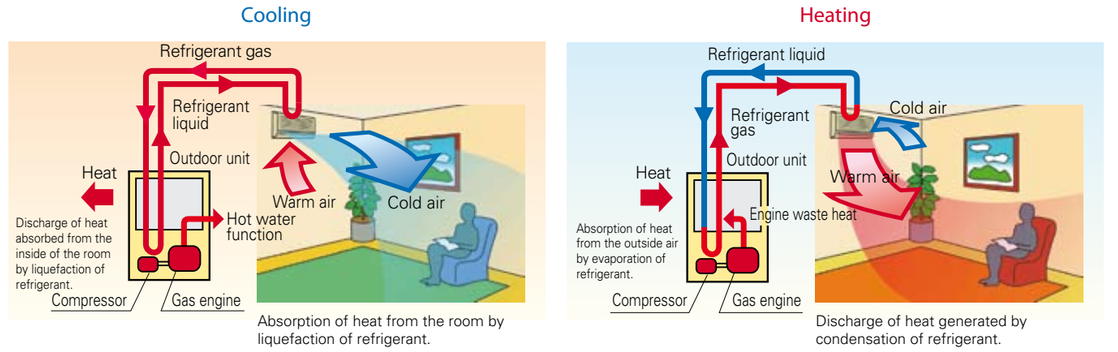
Miller cycle: This heat cycle has the characteristic that the closing time for the suction valve in regard to the base engine is late. As a result, the expansion stroke becomes relatively longer in comparison to the compression stroke.

Refrigerant heat exchanger

By fitting a new plate heat exchanger the engine waste heat is recovered efficiently and reused to improve performance. In addition a proportionate control 3 way change over valve is used for control of the engine cooling water to increase efficiency in heating operation



How a GHP works - High performance and low operating costs by using gas fuel



ECO G 3 Way Heat Recovery VRF System

R410A

Still the only heat recovery (3 way) GHP system in Europe.

The new M Series ECO G 3 Way offers even more performance and outstanding features when you need simultaneous heating and cooling. Now with increased capacities available from 16HP to 25HP, SANYO offers the greatest choice and flexibility to solve any power problem or site requirement.

- Simultaneous heating and cooling for total control
- Reduced gas consumption by Miller-cycle engine
- Reduced electrical power consumption by using DC motors
- New lightweight design by use of aluminium engine block reduces weight by 110kg
- Part load efficiencies increased
- Connectability increased to up to 36 indoor units
- Now available in 16, 20 and 25HP
- 200m maximum allowable piping length (L1) (equivalent - refer to technical manual)
- Diversity ratio 50% - 130%
- Extended pipe runs (total 500m)
- Silent mode offers a further 2dB(A) reduction
- 10,000 run hours between engine service intervals (equivalent to one maintenance every 3.2 years*)
- Full heating capacity down to -20°C
- No defrost cycle

* Assuming 3120 running hrs per year - 12 hrs x 5 days x 52 weeks

ECO G 3 Way is ideal for the following types of application:

- Office buildings with a diverse range of room temperatures due to differing load profiles.
- Buildings with computer rooms requiring year round cooling.

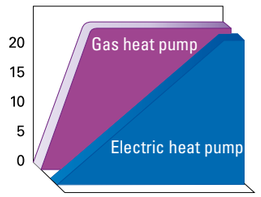
Additional parts

By taking its power supply from the nearest indoor unit, the SANYO solenoid valve (change-over box) does not require any additional fused spur and at only 150mm high can be easily installed within a 200mm void space.

LPG option

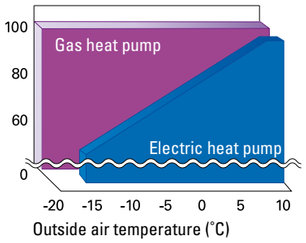
The option of using LPG as a power supply increases flexibility and avoids the problems of potential site restrictions in the future. The purer fuel is also excellent for further reductions in CO_2 emissions - a fact recognised by the government.

Comparison of the start times for heating operation
Room temperature (˚C)



Time axis (in case of the same load)

Comparison of heating capacity
Heating capacity (%)



Rating Conditions: Cooling Indoor 27°C DB 19°C WB Outdoor 35°C DB 24°C WB Heating Indoor 20°C DB Outdoor 7°C DB 6°C WB

ECO G 3 Way Outdoor Unit Specifications

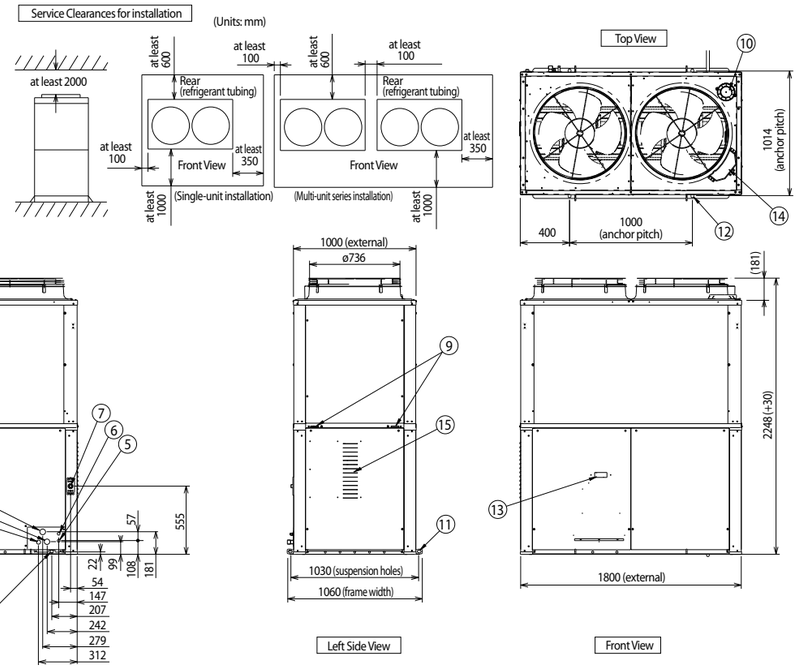
R410A

HP				16	20	25
Model				SGP-EZ150M2G2	SGP-EZ190M2G2	SGP-EZ240M2G2
Capacity	Cooling		kW	45.0	56.0	71.0
	Heating	STD	kW	50.0	63.0	80.0
	Heating	Low temp*	kW	53.0	67.0	75.0
Electricity	Cooling		kW	1.35		
	Heating		kW	1.01		1.54
Gas	Cooling		kW	31.6	38.3	60.9
	Heating	STD	kW	36.1	43.0	58.0
	Heating	LOW	kW	47.3	56.4	64.9
COP	Cooling			1.37	1.41	1.14
	Heating			1.35	1.43	1.34
	AVE			1.36	1.42	1.24
Size		Height	mm	2,248		
		Width	mm	1,800		
		Depth	mm	1,000 (+60)		
Weight			kg	845		875
Starter amperes			A	30		
Piping connection	Gas	Inches (mm)		1 1/8 (28.58)		
	Discharge	Inches (mm)		7/8 (22.22)		
	Liquid	Inches (mm)		3/4 (19.05)		
Pipe fuel gas				R3/4 (bolt thread)		
Pipe exhaust drain			mm	ø 25 rubber hose		
Operation sound			dB(A)	57	58	62
Indoor/outdoor capacity ratio				50-180% *1		
Number of indoor connections				36		

* 1: Low temp condition: Outdoor temperature 2 C˚.
Condenser actual pipe connections may vary from above pipe connections shown, please refer to technical manuals for full details.
Please refer to tube sizing charts for pipe selections and pipe length parameters.

Dimensions ECO G 3 Way (16-25HP)

Model Type	Size (mm) 150	190 240
①Suction refrigerant pipe	ø28.58	
②Discharge refrigerant pipe	ø22.22	ø25.4
③Liquid refrigerant pipe	ø19.05	
④Exhaust gas drain hose	OD: ø25 Length: 200	
⑤Inter-unit cable port	ø28	
⑥Electrical power supply port	ø28	
⑦Fuel gas port	G: R3/4	
⑧Condensation drain opening	ø20	
⑨Rain and condensation outlet		
⑩Engine exhaust outlet		
⑪Suspension holes	4 - ø20	
⑫Anchor holes	4 - ø24	
⑬Segmented display		
⑭Coolant intake (top)		
⑮Vent		



Rating Conditions: Cooling Indoor 27°C DB 19°C WB Outdoor 35°C DB 24°C WB Heating Indoor 20°C DB Outdoor 7°C DB 6°C WB

ECO G W-Multi for Heat Pump Applications

The new and improved M Series heat pump (2 Way) not only offers improved performance but also increased flexibility. Now available as multi-systems, many combinations are possible, from 13HP to 50HP, allowing for more power and enabling accurate matching of a system building load. Additional new features include part load engine management and compressor run hour equalisation.

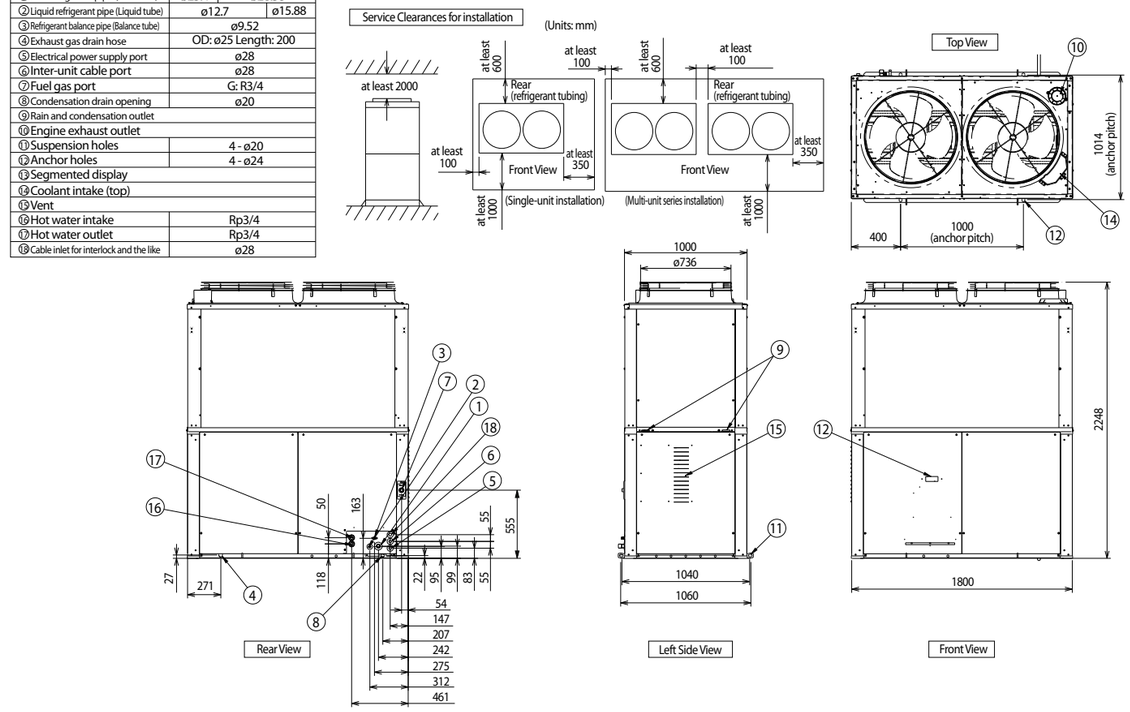
- Reduced gas consumption by Miller-cycle engine
- Reduced electrical power consumption by using DC motors
- New lightweight design by use of aluminium engine block reduces weight by 110kg
- Part load efficiencies increased
- Connectability increased - now up to 48 indoor units
- Multi-systems with combinations from 13HP up to 50HP
- 200m maximum allowable piping length (L1) (equivalent - refer to technical manual)
- Diversity ratio 50-180%
- Extended pipe runs (total 500m)
- Industry leading sound levels

- Silent mode offers a further 2dB(A) reduction
- Chiller option
  - 13HP (25kW cooling - 30kW heating)
  - 25HP (56kW cooling - 67kW heating)
- 10,000 run hours between engine service intervals (equivalent to one maintenance every 3.2 years*)
- Full heating capacity down to -20°C
- No defrost cycle

* Assuming 3120 running hrs per year - 12 hrs x 5 days x 52 weeks

Dimensions ECO G W-Multi 2 Way

	Size (mm)		
Model Type	120	150	190 and 240
① Gas refrigerant pipe (Gas tube)	ø25.4	ø28.58	
② Liquid refrigerant pipe (Liquid tube)	ø12.7	ø15.88	
③ Refrigerant balance pipe (Balance tube)	ø9.52		
④ Exhaust gas drain hose	OD: ø25 Length: 200		
⑤ Electrical power supply port	ø28		
⑥ Inter-unit cable port	ø28		
⑦ Fuel gas port	G: R3/4		
⑧ Condensation drain opening	ø20		
⑨ Rain and condensation outlet			
⑩ Engine exhaust outlet			
⑪ Suspension holes	4 - ø20		
⑫ Anchor holes	4 - ø24		
⑬ Segmented display			
⑭ Coolant intake (top)			
⑮ Vent			
⑯ Hot water intake	Rp3/4		
⑰ Hot water outlet	Rp3/4		
⑱ Cable inlet for interlock and the like	ø28		



HP			13	16	20	25	26	29	32	33*	36*	40*	45*	50
Model name			SGP-EW120M2G2W	SGP-EW150M2G2W	SGP-EW190M2G2W	SGP-EW240M2G2W	SGP-EW120M2G2W SGP-EW120M2G2W	SGP-EW120M2G2W SGP-EW150M2G2W	SGP-EW150M2G2W SGP-EW150M2G2W	SGP-EW120M2G2W SGP-EW190M2G2W	SGP-EW150M2G2W SGP-EW190M2G2W	SGP-EW190M2G2W SGP-EW190M2G2W	SGP-EW190M2G2W SGP-EW240M2G2W	SGP-EW240M2G2W SGP-EW240M2G2W
Capacity	Cooling	kW	35.50	45.00	56.00	71.00		80.50	90.00	91.50	101.00	112..0	127.00	142.00
	Heating STD	kW	40.00	50.00	63.00	80.00		90.00	100.00	103.00	113.00	126.00	143.00	160.00
	Heating Low temp*1	kW	42.50	53.00	67.00	75.00	85.00	95.50	106.00	109.50	120.00	134.00	142.00	150.00
	Hot water	kW	12.00	16.00	20.00	25.00	24.00	28.00	32.00	32.00	36.00	40.00	45.00	50.00
Electricity	Cooling	kW	0.85		1.35		1.70	2.20	2.70	2.20		2.70		
	Heating			1.01		1.54			2.02				2.55	3.08
Gas consumption	Cooling	kW	24.50	31.60	38.30	60.90	49.00	56.10	63.20	62.80	69.90	76.60	99.20	121.80
	Heating STD	kW	28.10	36.10	43.00	58.00	56.20	64.20	72.20	71.10	79.10	86.00	101.00	116.00
	Heating LOW	kW	36.80	47.30	56.40	64.90	73.60	84.10	94.60	93.20	103.70	112.80	121.30	129.80
COP	Cooling		1.40	1.37	1.41	1.14	1.40	1.38	1.37	1.41	1.39	1.41	1.25	1.14
	Heating		1.37	1.35	1.43	1.34	1.37	1.36	1.35	1.41	1.39	1.43	1.38	1.34
	AVE		1.39	1.36	1.42	1.24	1.39	1.37	1.36	1.41	1.39	1.42	1.31	1.24
Max COP (inc hot water)	Cooling		1.87	1.85	1.92	1.54	1.87	1.86	1.85	1.90	1.89	1.92	1.69	1.54
Size	Height	mm	2,248											
	Width	mm	1,800					1,800 + 100 (min distance) + 1,800 (in a straight installation)						
	Depth	mm	1,000 (+60)											
Weight		kg	790		820	850		1,580		1,610		1,640	1,670	1,700
Starter amperes		(A)	30											
Piping connection	Gas	Inches (mm)	1 1/8 (28.58)					1 3/8 (34.92)				1 5/8 (41.27)		
	Liquid	Inches (mm)	1/2 (12.7)		5/8 (15.88)			3/4 (19.05)						
	Balance	Inches (mm)	3/8 (9.52)											
Pipe fuel gas			R3/4 (bolt thread)											
Pipe exhaust drain			ø25 rubber hose											
Operation sound		dB(A)	57		58	62		60			61		63	65
Indoor/outdoor capacity ratio			50-180 %					50-130 %						
Number of indoor connections			32		36			48						

* In case of these combinations EGW190M2G2W is able to connect as W-multi instead of EW190M2G2w.
* 1: Low temp condition: Outdoor temperature 2 C°.
Condenser actual pipe connections may vary from above pipe connections shown, please refer to technical manuals for full details.
Please refer to tube sizing charts for pipe selections and pipe length parameters.
Capacity Hot Water is available when outside ambient air temperature is above 7C°.

Rating Conditions: Cooling Indoor 27°C DB 19°C WB Outdoor 35°C DB 24°C WB Heating Indoor 20°C DB Outdoor 7°C DB 6°C WB

Rating Conditions: Cooling Indoor 27°C DB 19°C WB Outdoor 35°C DB 24°C WB Heating Indoor 20°C DB Outdoor 7°C DB 6°C WB

ECO G Power - GHP with electricity generation & hot water supply

R410A

R410A

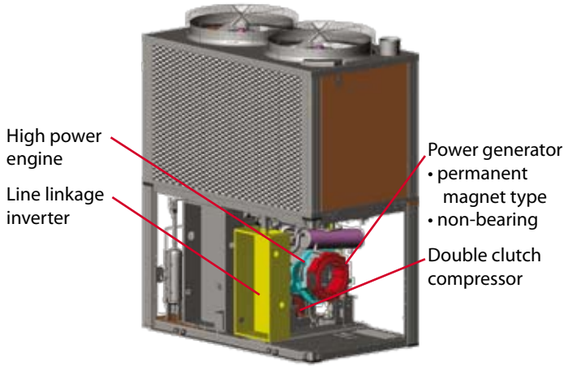
NEW

NEW 2 way gas driven VRF with electrical power generator

SANYO's ECO G Power is a revolution in air conditioning design. Fitted with a permanent magnet, non-bearing type generator, it is the first VRF system that can supply heating, cooling, hot water and now also a supply of electrical power.

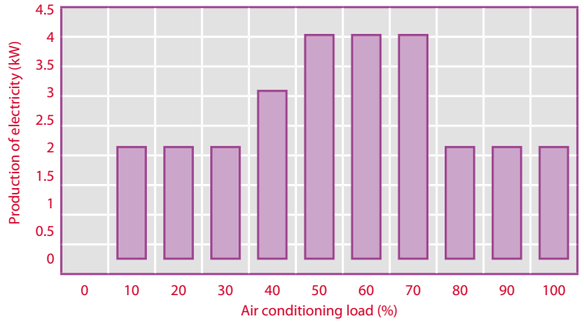
Each ECO G Power unit has a 4.0kW generator, which provides enough electricity to power 8 computers or other applications.

- Innovative technology that reduces CO_2 emissions by up to 30%
- Heat pump air conditioning system providing cooling or heating
- Can provide both electricity and hot water in heating and cooling mode
- Up to 4kW electricity generated
- Very efficient generator
- Hot water provided when cooling or heating when outside ambient air temperature is above 7°C
- 22kW hot water generation capacity
- 20HP model provides 56kW cooling or 63kW heating
- Can connect to up to 36 indoor units
- 200m maximum allowable piping length (L1) (equivalent - refer to technical manual)
- IU/OU capacity ratio 50 - 130%



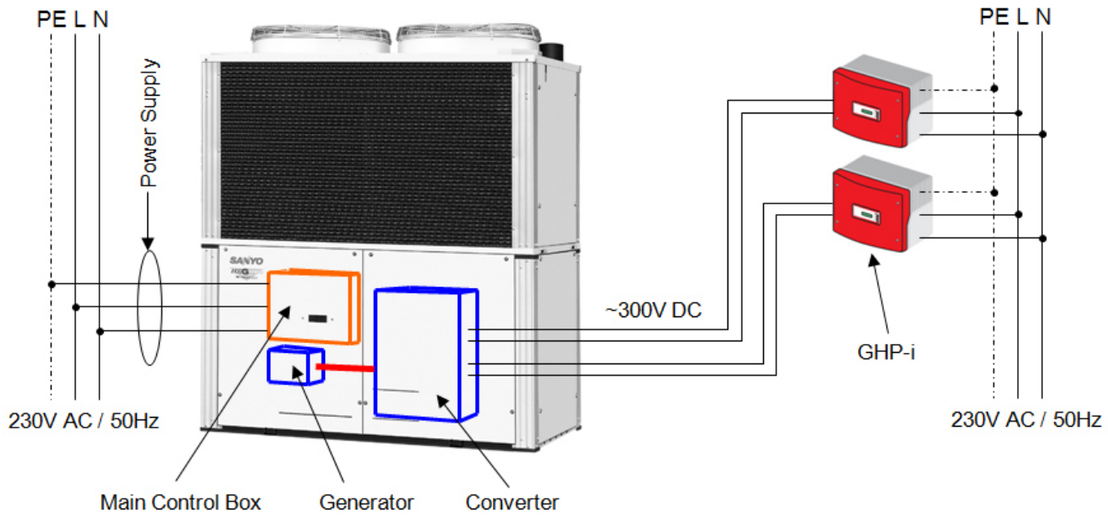
Production of electricity

Generates from 2kW to 4kW depending on air conditioning load



Generate electricity during heating or cooling operation

Generate electricity and air conditioning (heating or cooling) at the same time by using remaining engine power. ECO G Power can generate from 2.3 to 4.0kW electricity at a generation efficiency of more than 40%.

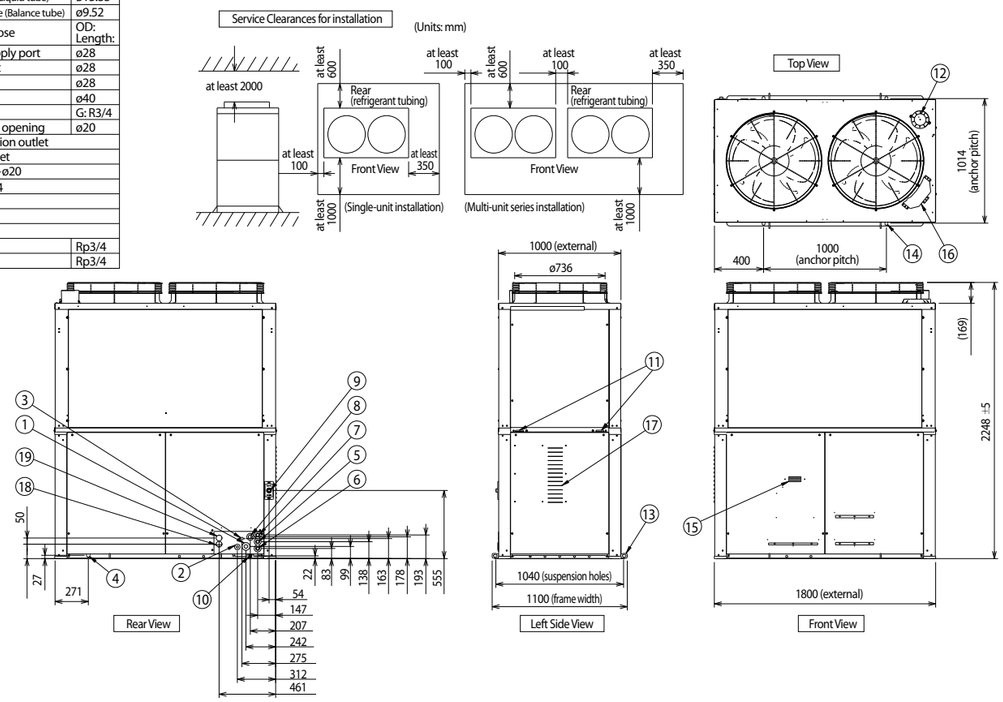


HP				20	33	36	40	45
Model				SGP-EGW190M2G2W	SGP-EW120M2G2W SGP-EGW190M2G2W	SGP-EW150M2G2W SGP-EGW190M2G2W	SGP-EGW190M2G2W SGP-EGW190M2G2W	SGP-EGW190M2G2W SGP-EW240M2G2W
Capacity	Cooling		kW	56.0	91.50	101.00	112.00	127.00
	Heating	STD	kW	63.0	103.0	113.00	126.00	143.00
	Heating	Low temp*1	kW	67.0	109.50	120.00	134.00	142.00
	Hot water			22.0	34.0	38.0	44.0	47 .00
Power generater capacity at rating			kW	DC 2.5 (Max 4.3)				
Electricity	Cooling		kW	1.35	2.20	2.70		
	Heating		kW	1.01	2.02			2.55
Gas consumption		Cooling	kW	44.0 (38.3)*	68.50	75.60	88.00	104.90
		Heating STD	kW	48.7 (43.0)*	76.80	84.80	97.40	101.00
		Heating LOW	kW	62.1 (56.4)*	98.90	109.40	124.20	121.30
COP Air conditioning only		Cooling		1.33 (1.41)*	1.29		1.23	1.18
		Heating		1.34 (1.43)*	1.31	1.30	1.27	1.38
		AVE		1.34 (1.42)*	1.30		1.25	1.28
Max COP (Inc generater, hot water) Cooling				1.78	1.81	1.80	1.78	1.69
Height	Height		mm	2,248				
	Width			1,800	1,800 + 100 (Min distance) + 1,800			
	Depth			1,000 (+60)				
Weight			kg	875	1,660	1,685	1,740	1,720
Starter amperes			A	30				
Pipe	Gas		Inches (mm)	1 1/8 (28.58)	1 3/8 (34.92)		1 5/8 (41.27)	
	Liquid			5/8 (15.88)	3/4 (19.05)			
	Balance			3/8 (9.52)				
Pipe fuel gas				R3/4 (bolt, thread)				
Pipe exhaust drain port			mm	ø25 rubber hose				
Operation sound			dB(A)	58	61			63
Indoor/outdoor capacity ratio				50-130%				
Number of indoor connections*				32	48			

Condenser actual pipe connections may vary from above pipe connections shown, please refer to technical manuals for full details.
Please refer to tube sizing charts for pipe selections and pipe length parameters.
Capacity Hot Water is available when outside ambient air temperature is above 7°C.

Dimensions ECO G Power

	Size (mm)
①Gas refrigerant pipe (Gas tube)	ø28.58
②Liquid refrigerant pipe (Liquid tube)	ø15.88
③Refrigerant balance pipe (Balance tube)	ø9.52
④Exhaust gas drain hose	OD: Length:
⑤Electrical power supply port	ø28
⑥Inter-unit cable port	ø28
⑦Inverter cable port	ø28
⑧Inverter cable port	ø40
⑨Fuel gas port	G: R3/4
⑩Condensation drain opening	ø20
⑪Rain and condensation outlet	
⑫Engine exhaust outlet	
⑬Suspension holes 4-ø20	
⑭Anchor holes 4 - ø24	
⑮Segment display	
⑯Coolant intake (top)	
⑰Vent	
⑱Hot water intake	Rp3/4
⑲Hot water outlet	Rp3/4

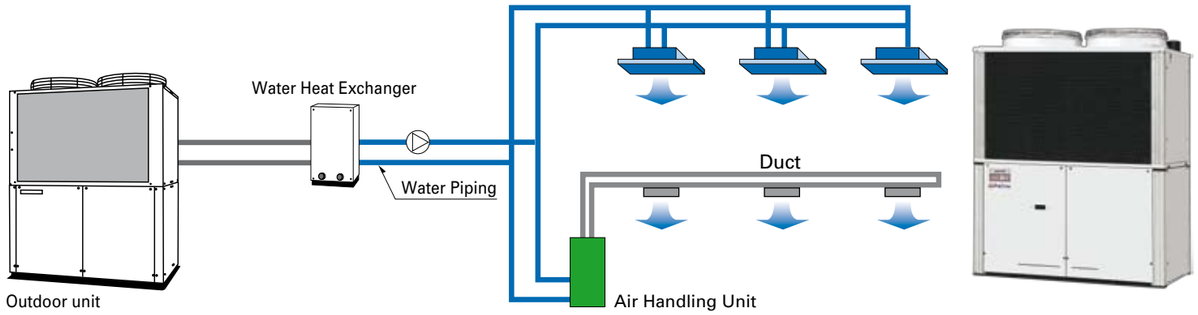


Rating Conditions: Cooling Indoor 27°C DB 19°C WB Outdoor 35°C DB 24°C WB Heating Indoor 20°C DB Outdoor 7°C DB 6°C WB

Rating Conditions: Cooling Indoor 27°C DB 19°C WB Outdoor 35°C DB 24°C WB Heating Indoor 20°C DB Outdoor 7°C DB 6°C WB

Additional GHP Functions

GHP Chiller available with outdoor unit capacities from 71kW



The SANYO ECO G Water Heat Exchanger can provide water at a wide range of temperatures suitable for a variety of commercial applications ranging from comfort air conditioning to food processing or the replacement of boilers and other systems.

- New 25 kW and 50 kW capacity models
- In cooling (chiller) mode provides water from -15°C to 15°C
- In heating mode can provide hot water up to 55°C, for example for under floor heating applications
- Includes water flow protection to prevent freezing
- Temperature sensor included
- S-Link communication is connectable with any controllers
- Split system means reduced installation cost and the use of a less powerful circulation pump
- One touch changeover between cooling and heating operation
- The system can accommodate up to 120m (actual length) of piping between the outdoor unit and the water heat exchanger, allowing flexibility of installation location
- The system uses antifreeze coolant, so it can produce cold water even at -15°C, thereby complying with "brine specifications"

Model No.			SGP-WE80M1	SGP-WE170M1
SGP-EW120M2G2W	Cooling capacity	kW	25	30
	Heating capacity	kW	30	35.5
SGP-EW150M2G2W	Cooling capacity	kW	25	37.5
	Heating capacity	kW	30	45
SGP-EW190M2G2W and SGP-EGW190M2G2W	Cooling capacity	kW	25	50
	Heating capacity	kW	30	60
SGP-EW240M2G2W	Cooling capacity	kW	25	56
	Heating capacity	kW	30	67
Electrical rating	Cooling power input	kW	0.01	
	Heating power input	kW	0.01	
Power supply			220/230/240V Single Phase 50Hz	
Size	Height	mm	1,000	
	Width	mm	550	
	Depth	mm	965	
Weight		kg	125	160
Standard cold/hot water flow rate		m^3/h	4.3	8.6
Hydrostatic loss		kPa	8.5	11.3
Holding water quantity inside the unit		m^3	0.01	0.02
Minimum holding water quantity outside the unit		m^3	0.28	0.50
Piping refrigerant	Gas pipe	mm	ø22.22	ø28.58
	Liquid pipe	mm	ø9.52	ø15.88
Heat exchanger			hot/cold heat exchanger	
Water circuit limit pressure		MPa	0.686	
Anti-freezing protection system			Protective thermostat	

Specifications subject to change without notice.

Operating condition	Cooling	Heating (standard)	Heating (low temperature)
Water temperature of water heat exchanger unit	Outlet 7°C	Outlet 45°C	Outlet 45°C
Outdoor side intake air temperature	35°C DB	7°C DB, 6°C WB	2°C DB, 1°C WB

Note: The gas consumption can be 110% of the specification value depending on the operating conditions.

Hot water supply function (during cooling or heating operation)

SGP-EW120M2G2W SGP-EW150M2G2W SGP-EW190M2G2W SGP-EW240M2G2W SGP-EGW190M2G2W

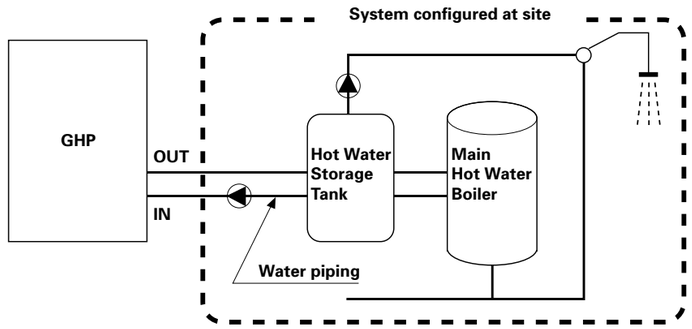
The engine waste heat, which is normally exhausted into the atmosphere, is recovered via the heat exchanger and effectively used as hot water, so the GHP system acts as a subsystem that alleviates the load on the client's main hot water system and therefore offers "free" hot water.

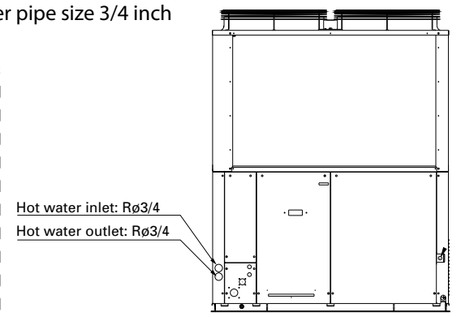
Water heating capacity up to 65 kW (of 75°C hot water)

Hot water piping allowable pressure 0.7 MPa

Hot water circulation rate 2 - 3.9m^3/h

Hot water pipe size 3/4 inch





Rating Conditions: Cooling Indoor 27°C DB 19°C WB Outdoor 35°C DB 24°C WB Heating Indoor 20°C DB Outdoor 7°C DB 6°C WB

GU Type Heat Exchanger & CFR Units

SANYO's new heat recovery ventilation system allows total control via a system network whilst modulating the temperature and humidity of incoming air supply.

- Integration of heat recovery ventilation and DX coil technology for optimum air temperature control
- Connects to all ECO & GHP outdoor units with a filter option
- 3 Way: Solenoid valve kit is required for each unit
- 2 Way: RAP kit is required for each unit

Indoor unit specifications

Model Name			SPW-GU055XH	SPW-GU075XH	SPW-GU105XH
Air circulation (H) m^3/h			500	750	1,000
Power source				220/230/240V, 1 phase - 50 Hz	
Fresh air load treatment capacity	UK Cooling	kW	5.3 (1.7)*1	8.2 (2.6)*1	10.7 (3.4)*1
	UK Heating	kW	6.5 (2.3)*1	9.8 (3.5)*1	12.6 (4.6)*1
Enthalpy exchange efficiency	UK Cooling	%		59	
	UK Heating	%		67	
Temp exchange efficiency				75	
Equivalent cooling capacity		kW	3.6	5.6	7.3
		BTU/h	12,000	19,000	25,000
Power input	Cooling	kW	0.532	0.737	0.798
	Heating	kW	0.532	0.737	0.798
Running current	Cooling	Amps	2.4	3.2	3.5
	Heating	Amps	2.4	3.2	3.5
Fan motor	Type			Sirocco fan	
	External static pressure-return air	Pa	183 (170)	221 (188)	135 (88)
	External static pressure-supply air	Pa	205 (182)	264 (218)	176 (137)
	Output	kW	0.28 (4P)x2	0.35 (4P)x2	
Sound pressure level (C/H)		db(A)	46 (Cooling), 47 (Heating)	47 (Cooling), 48 (Heating)	48 (Cooling), 49 (Heating)
Dimensions	Height	mm	425	450	
	Width	mm	1785	1903	
	Depth	mm	1000	1120	1220
Piping connections	Liquid (flare)	mm (inches)	6.35 (1/4)		
	Gas (flare)	mm (inches)	12.7 (1/2)		
	Drain piping		VP-25		
Connection duct diameter		mm	250		300
Net weight		kg	134	153	168

The values in ( ) for the external static pressure and operating sound are for use of booster cable. *1: Heat recovery capacity by heat exchanger. Data subject to change without notice.

The CFR- PHE uses a unique purifying Bioxigen system to produce negative ions this can reduce pollutants by up to 85% whilst improving, significantly air quality within most environments.

- High efficiency heat exchanger & Easy to clean filters

The CFR-PHE unit structure is constructed from Aluzink frame work and galvanised steel with 20 mm thick fire resistant acoustic insulation, reducing both weight and sound levels to a minimum. The system is supplied with ducted spigots which can be positioned either at the front or side of the unit to ease installation.

The high efficiency low pressure loss total heat exchanger is made of specially treated paper to enable the unit to be as efficient as 76% during normal operation. This allows system to recover both latent and sensible heat.

Indoor unit specifications

Model CFR/ CFR-PHE		33	55	110	175	220
Nominal air flow *	m3/hr	300	620	920	1580	1850
External Static Pressure	pa	45	55	65	70	77
Sound Pressure **	dB(A)	43	51	50	53	52
Fans						
Power in	Watts	184	340	294	700	700
Absorbed power	A	0.75	1.8	2.2	4.4	4.8
Fan speeds	no	1			3	
Insulation Class				F		
Electrical supply	v/ph/htz			230/1/50		
Bioxigen Elements (PHE only)						
Number of elements				2 X C		2 X F
Electrical supply	v/ph/htz			230/1/50		
Power in	Watts	8	8	8	8	8
Filter				EU3		
Paper Heat Exchanger	CFR-PHE					
Temperature Efficiency heating ***		76%	74%	72%	68%	73%
Temperature Efficiency cooling ****		62%	60%	58%	54%	59%

* Nominal air flow ** Sound pressure 1.5 mts from the unit in free field *** Data referred to -5°C 80% RH OAT room condition 20°C 50% RH **** Data referred to 32°C 50% RH OAT room condition 26°C 50% RH

Rating Conditions: Cooling Indoor 27°C DB 19°C WB Outdoor 35°C DB 24°C WB Heating Indoor 20°C DB Outdoor 7°C DB 6°C WB

VRF Indoor Unit Range for ECOi and GHP

R410A

Wider operation
Comfortable auto-flap control
Self-diagnosing function
Automatic restart function for power failure
Automatic fan operation
Air Sweep
Mild dry
Built-in drain pump

Model size		7	9	12	16	18	22	25	36	48	60	76	96	Wireless remote control: Built-in infra red sensor	Wireless remote control: Separate infra red sensor	Functions
Capacity kW	Cooling	2.2	2.8	3.6	4.5	5.6	6.4	7.3	10.6	14.0	16.0	22.4	28.0			
	Heating	2.5	3.2	4.2	5.0	6.3	7.0	8.0	11.4	16.0	18.0	25.0	31.5			
Capacity BTU/h	Cooling	7,500	9,600	12,000	15,000	19,000	22,000	25,000	36,000	47,800	54,600	76,400	95,500			
	Heating	8,500	11,000	14,000	17,000	21,000	24,000	27,000	39,000	54,600	61,500	85,300	107,500			
X Type Semi-Concealed Cassette		SPW-X075XH SPW-XDR74GXH56B Panel PNR-XD484GHAB	SPW-X095XH SPW-XDR94GXH56B Panel PNR-XD484GHAB	SPW-X125XH SPW-XDR124GXH56B Panel PNR-XD484GHAB	SPW-X165XH SPW-XDR164GXH56B Panel PNR-XD484GHAB	SPW-X185XH SPW-XDR184GXH56B Panel PNR-XD484GHAB		SPW-X255XH SPW-XDR254GXH56B Panel PNR-XD484GHAB	SPW-X365XH SPW-XDR364GXH56B Panel PNR-XD484GHAB	SPW-X485XH SPW-XDR484GXH56B Panel PNR-XD484GHAB	SPW-X605XH SPW-XDR604GXH56B Panel PNR-XD484GHAB			•		WIDE OPERATION, DRY, AUTO, DP
XM Type Semi-Concealed		SPW-XM075XH Panel PNR-XM185	SPW-XM095XH Panel PNR-XM185	SPW-XM125XH Panel PNR-XM185	SPW-XM165XH Panel PNR-XM185	SPW-XM185XH Panel PNR-XM185								•	•	WIDE OPERATION, DRY, AUTO, DP
US Type Concealed Duct		SPW-US075XH	SPW-US095XH	SPW-US125XH	SPW-US165XH	SPW-US185XH									•	WIDE OPERATION, DRY, DP
U Type Concealed Duct		SPW-U075XH SPW-UR74GXH56B	SPW-U095XH SPW-UR94GXH56B	SPW-U125XH SPW-UR124GXH56B	SPW-U165XH SPW-UR164GXH56B	SPW-U185XH SPW-UR184GXH56B		SPW-U255XH SPW-UR254GXH56B	SPW-U365XH SPW-UR364GXH56B	SPW-U485XH SPW-UR484GXH56B	SPW-U605XH SPW-UR604GXH56B				•	WIDE OPERATION, DRY, DP
DR Type Concealed Duct	25,48 type / 76,96 type							SPW-DR254GXH56B	SPW-DR364GX-H56B	SPW-DR484GX-H56B		SPW-DR764GX-H56B	SPW-DR964GX-H56B		•	WIDE OPERATION, DRY
K Type Wall Mounted Unit		SPW-K075XH	SPW-K095XH	SPW-K125XH										•	•	WIDE OPERATION, DRY, AUTO
KR Type Wall Mounted Unit					SPW-KR164GXH56B	SPW-KR184GXH56B		SPW-KR254GXH56B						•	•	WIDE OPERATION, DRY, AUTO
T Type Ceiling-Mounted Unit				SPW-T125XH SPW-TDR124GXH56B	SPW-T165XH SPW-TDR164GXH56B	SPW-T185XH SPW-TDR184GXH56B		SPW-T225XH SPW-TDR254GXH56B	SPW-T365XH SPW-TDR364GXH56B	SPW-T485XH SPW-TDR484GXH56B				•	•	WIDE OPERATION, DRY, AUTO
FTR Type Floor/Ceiling Mounted Units		SPW-FTR74EXH56B	SPW-FTR94EXH56B	SPW-FTR124EXH56B	SPW-FTR164EXH56B	SPW-FTR184EXH56B	SPW-FTR224EXH56B							•	•	WIDE OPERATION, DRY, AUTO
FUR Type Floor/Ceiling Slim Concealed Duct		SPW-FUR74EXH56B	SPW-FUR94EXH56B	SPW-FUR124EXH56B	SPW-FUR164EXH56B	SPW-FUR184EXH56B	SPW-FUR224EXH56B								•	WIDE OPERATION, DRY
FR Type Floor Standing Unit		SPW-FR74GXH56B	SPW-FR94GXH56B	SPW-FR124GXH56B	SPW-FR164GXH56B	SPW-FR184GXH56B		SPW-FR254GXH56B							•	WIDE OPERATION, DRY
FMR Type Concealed Floor Standing Unit		SPW-FMR74GXH56B	SPW-FMR94GXH56B	SPW-FMR124GX-H56B	SPW-FMR164GX-H56B	SPW-FMR184GX-H56B		SPW-FMR254GX-H56B							•	WIDE OPERATION, DRY
ADR Type Semi-Concealed Cassette 1-Way Air Discharge		SPW-ADR74GXH56B Panel PNR-AD124GHB	SPW-ADR94GXH56B Panel PNR-AD124GHB	SPW-ADR124GX-H56B Panel PNR-AD124GHB										•	•	WIDE OPERATION, DRY, AUTO, DP
SR Type Semi-Concealed Cassette 2-Way Air Discharge		SPW-SR74GXH56B Panel PNR-S124GHB	SR94GXH56B Panel PNR-S124GHB	SR124GXH56B Panel PNR-S124GHB	SR164GXH56B, Panel PNR-S124GHB	SR184GXH56B Panel PNR-S124GHB		SPW-SR254GXH56B Panel PNR-S253GHANB						•	•	WIDE OPERATION, DRY, AUTO, DP
LDR Type Semi-Concealed Slim Cassette			SPW-LDR94GXH56B Panel PNR-LD254GHAB	SPW-LDR124GXH56B Panel PNR-LD254GHAB	SPW-LDR164GXH56B Panel PNR-LD254GHAB	SPW-LDR184GXH56B Panel PNR-LD254GHAB		SPW-LDR254GXH56B Panel PNR-LD254GHAB						•	•	WIDE OPERATION, DRY, AUTO, DP
GU Type Total Heat Exchanger			SPW-GU055XH		SPW-GU075XH	SPW-GU105XH									•	WIDE OPERATION, DRY

Rating Conditions: Cooling Indoor 27°C DB 19°C WB Outdoor 35°C DB 24°C WB Heating Indoor 20°C DB Outdoor 7°C DB 6°C WB

Rating Conditions: Cooling Indoor 27°C DB 19°C WB Outdoor 35°C DB 24°C WB Heating Indoor 20°C DB Outdoor 7°C DB 6°C WB

Individual Control Systems Overview

A wide variety of control options to meet the requirements of different customers.

Operation system	Individual control systems			Timer operation
Requirements	Normal operation	Operation from each seat	Simple operation	Daily and weekly programme
External appearance				
Type, model name	Timer wired remote controller RCS-TM80BG	Wireless remote controller RCS-SH80BG.WLB RCS-TH80BG.WLB RCS-BH80AG.WLB RCS-TRP80BG.WLB RCS-SH1BGB	Simplified remote controller RCS-KR1EG	Schedule timer SHA-TM64AGB
Number of indoor units which can be controlled	1 group, 8 units	1 group, 8 units	1 group, 8 units	64 groups, max. 64 units
Use limitations	Up to 2 units can be connected per group.	Up to 2 units can be connected per group.	Up to 2 units can be connected per group.	Power supply from the system controller. When there is no system controller, connection is possible to the T10 terminal of an indoor unit.
Connectable indoor unit	4 series indoor unit	4 series indoor unit	4 series indoor unit	4 series indoor unit
Function				
ON/OFF	•	•	•	-
Mode setting	•	•	•	-
Fan speed setting	•	•	•	-
Temperature setting	• *1	• *1	• *1	-
Air flow direction	•	•	•	-
Permit/Prohibit switching	-	-	-	-
Weekly programme	•	-	-	•

*1 Setting is not possible when a remote control unit is present. (Use the remote control for setting.)

Rating Conditions: Cooling Indoor 27°C DB 19°C WB Outdoor 35°C DB 24°C WB Heating Indoor 20°C DB Outdoor 7°C DB 6°C WB

Centralised Control Systems Overview

Centralised control systems				
	Operation with various function from central station	Only ON/OFF operation from central station	Simplified charge ratio for each tenant: Touch screen panel	Simplified charge ratio for each tenant: Personal computer (field supply)
External appearance			 Web application	
Type, model name	System controller SHA-KC64AGB	ON/OFF controller SHA-KC16KAGB	Intelligent controller SHA-KT256EG	Communication adaptor SHA-KA128AGB
Number of indoor units which can be controlled	64 groups, max. 64 units	16 groups, max. 64 units	64 units x 4 systems, max. 256 units	2 systems, max. 128 units
Use limitations	Up to 10 units can be connected to one system. Main unit/sub unit (1 main unit + 1 sub unit) connection is possible. Use without remote controller is possible.	Up to 8 units (4 main units + 4 sub units) can be connected to one system. Use without remote controller is impossible.	A communication adaptor (SHA-KA128AGB) must be installed for three or more systems.	Maximum 500 indoor units (128 per communication adaptor)
Connectable indoor unit	4 series indoor unit	4 series indoor unit	4 series indoor unit	4 series indoor unit
Function				
ON/OFF	•	•	•	•
Mode setting	•	-	•	•
Fan speed setting	•	-	•	•
Temperature setting	•	-	•	•
Air flow direction	• *1	-	• *1	• *1
Permit/Prohibit switching	•	•	•	•
Weekly programme	•	-	•	•

Rating Conditions: Cooling Indoor 27°C DB 19°C WB Outdoor 35°C DB 24°C WB Heating Indoor 20°C DB Outdoor 7°C DB 6°C WB

Contact your local SANYO distributor for brochures on all other ranges of air conditioning and heating solutions


ELECTRIC VRF


COMMERCIAL SPLIT SYSTEMS


ROOM AIR CONDITIONERS


CO_2 ECO HEATING SYSTEM

Indicates conformation with EC Directives

ISO 9001: 2001
Certificate Number: JQ116B

ISO 14001: 2001
Certificate Number: ECOOJ0303-33

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Rating Conditions
The cooling and heating capacities are based on the following conditions:
Cooling: Indoor temperature 27˚C DB/19˚C WB, Outdoor temperature 35˚C DB/24˚ C WB.
Heating: Indoor temperature 20˚C DB, Outdoor Temperature 7˚C DB 6˚C WB.

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