YANMAR

AIR-TO-WATER WITH HYDROBOX

PRODUCT CATALOGUE AND PLANNING ASSISTANCE

LSM Energy Solutions: (800) 663-1753
www.lsmenergysolutions.com

GAS ENGINE HEAT PUMP

WITH HYDROBOX

As an air-to-water system, the gas engine heat pump situated in the outside area is connected in classic split construction with the Hydrobox positioned inside the building. Frost protection measures can thus be dispensed with.

The system is suitable for monovalent operation as a result of the internal use of the engine and exhaust heat. Moreover, this heat is used for defrosting the registers without heating interruption.

This system solution is used in new and existing buildings and is not just suitable for commercial applications but also for industrial and process applications.

- ✓ Simultaneous heating and cooling with integrated heat recovery
- ✓ Power adjustment by means of modulating operation
- ✓ Meets all requirements of the renewable energy laws
- ✓ High efficiency due to use of condensing technology
- ✓ Lower operating costs compared to boilers and electric water chillers
- ✓ Low noise emissions
- ✓ Eligible for subsidies and exempt from energy tax
- ✓ Engine waste heat can be recovered and reused in cooling mode, allowing simultaneous cooling and heating e.g. for domestic hot water heating (heat recovery optional)
- ✓ Cascadable up to the MW range
- ✓ No frost protection measures necessary for the lines between the gas engine heat pump (outdoor unit) and Hydrobox (indoor unit)
- ✓ Optionally, a complete input of parameters is possible via remote monitoring
- ✓ No heating interruption in defrost mode

GAS ENGINE HEAT PUMP

TECHNICAL DATA

TÜV certified

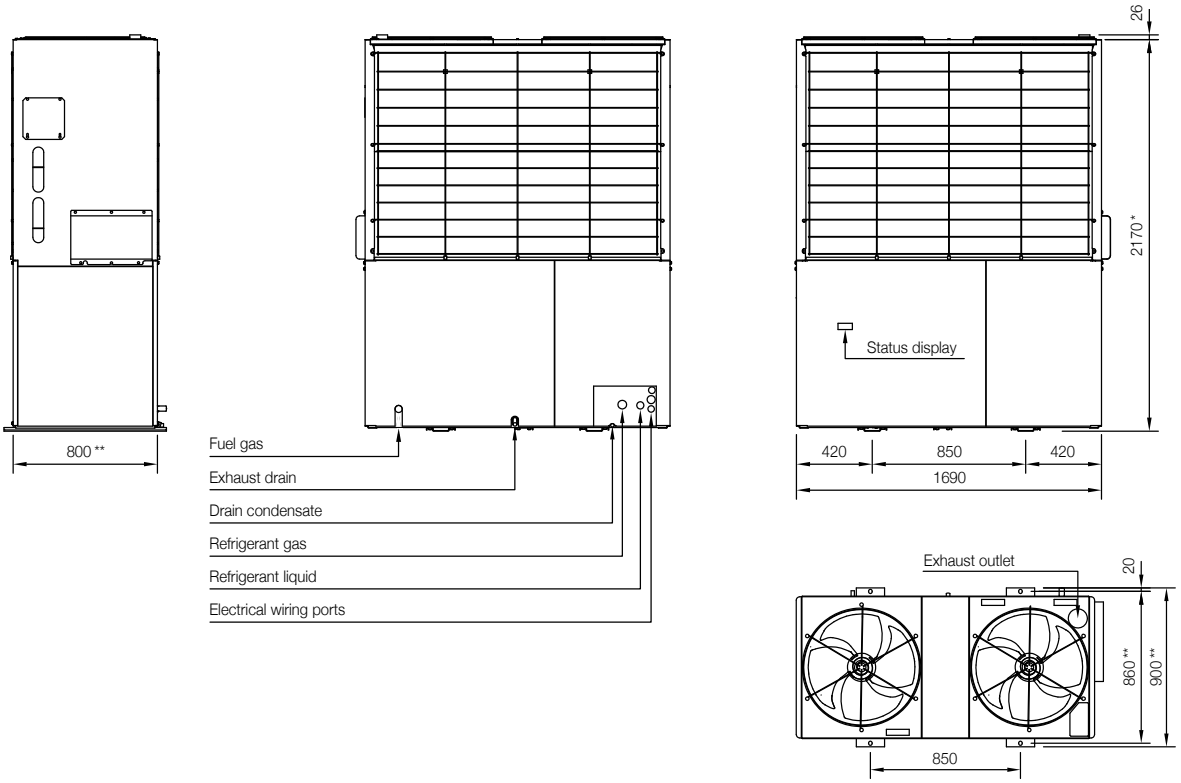
ENCP…J				450	560	710	850
Rated heating capacity (with Hydrobox) [1]	A7 / W35		kW	46	52	70	81
Heating capacity (with Hydrobox) [1]	A-10 / W45		kW	43	48	55	64
Rated cooling capacity (with Hydrobox) [1]	A35 / W7		kW	36	45	53	64
Cooling capacity (with Hydrobox) [1]	A35 / W15		kW	46	57	68	82
Dimensions [2]	H x W x D		mm	2,170 x 1,690 x 800		2,170 x 2,100 x 800	
Weight (without optional heat recovery)			kg	880	890	1,080	1,080
Electrical characteritics	Power supply		V / Ph / Hz	230 / 1 / 50			
	Starting current		A	20	20	25	25
	Operating current heating / cooling		A	3.69 / 4.16	4.40 / 4.73	6.50 / 6.93	7.21 / 7.93
	Power consumption heating / cooling		kW	0.77 / 0.87	0.92 / 0.99	1.36 / 1.45	1.51 / 1.66
Fuel data	Gas type			Natural gas group II			
	Rated gas consumption (LHV) heating / cooling		kW	36 / 34	40 / 42	55 / 51	59 / 62
	Max. gas consumption (LHV_i)		kW	69	75	77	86
	Gas supply pressure		mbar	17–25			
Engine	Type			YANMAR four-stroke engine, water-cooled			
	Cylinder			3	3	4	4
	Cubic capacity		cm^3	1,642	1,642	2,190	2,190
	Speed range	Heating	1 / min	650–2,750	650–2,800	725–2,800	650–2,800
		Cooling	1 / min	650–2,100	650–2,200	725–2,300	650–2,300
	Lubricant oil	Type		YANMAR genuine GEHP oil			
		Quantity	l	34	38	50	50
Cooling water engine	Type			YANMAR genuine LLC			
	Quantity		l	23	23	29	29
	Concentration		%	50			
Compressors	Type			Scroll			
	Quantity			2			
	Power transmission			Poly-V flat belt			
Refrigerant	Type			R410A			
	Quantity		kg	11.8			
Fans	Type			Axial			
	Quantity			2	2	3	3
	Related air flow		m^3 / h	21,600	22,800	32,400	34,200
	External pressure (max.)		Pa	5 (30)			
Sound pressure level [3]	Nominal		dB(A)	57	58	61	62
	Quiet mode		dB(A)	54	55	58	59
	Maximum (heating mode)		dB(A)	62	62	66	66
Pipe connections	Refrigeration gas / liquid pipe [4]		Inch	1 ⅛ / ½	1 ⅛ / ⅝	1 ¼ / ¾	1 ¼ / ¾
	Exhaust pipe (outside diameter)		mm	60.5			
	Fuel gas pipe		Inch	R 3 / 4			
	Drain pipe (inside diameter)		mm	15			
	Exhaust drain pipe (inside diameter)		mm	15			
Maintenance interval engine / engine oil [5]			h	10,000 / 20,000			
Heating capacity heat recovery (optional, in cooling mode)			kW	16	20	25	30

1) Capacities, electrical characteristics and fuel consumptions are calculated for a standard indoor/outdoor unit combination with a 7.5 m piping length and 0 m level difference. These are Hydrobox water outlet temperatures.
2) See accessories for dimensions with vibration dampers.
3) The operating noise levels shown above where measured at a distance of 1 m to the front face of each unit and at a height of 1.5 m and then converted into an anechoic room equivalent level. The noise level of the actually installed unit is usually higher than the indicated value due to influences of ambient noise and echo.
4) The dimensions of the refrigerant connection pipes can be found on page 14 or 20.
5) Depending on working and operating conditions.

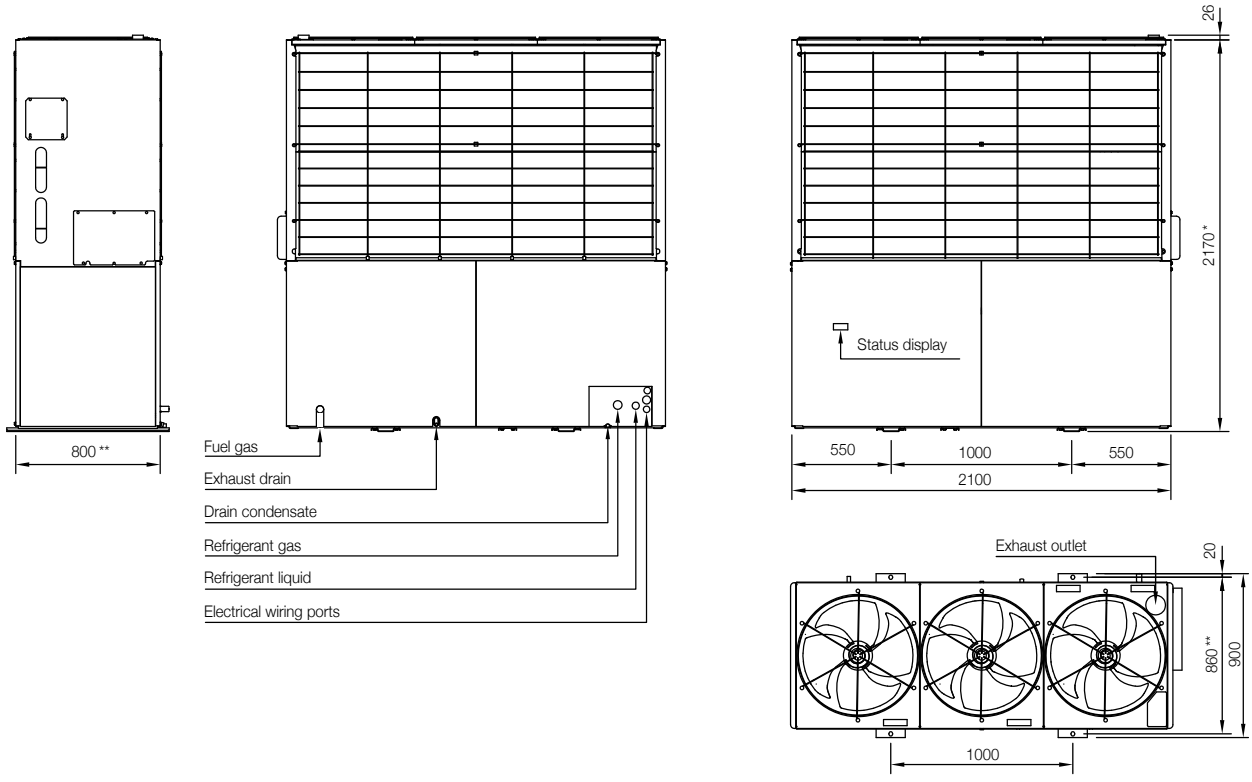
GAS ENGINE HEAT PUMP

DIMENSIONS

ENCP 450 / 560 J



ENCP 710 / 850 J



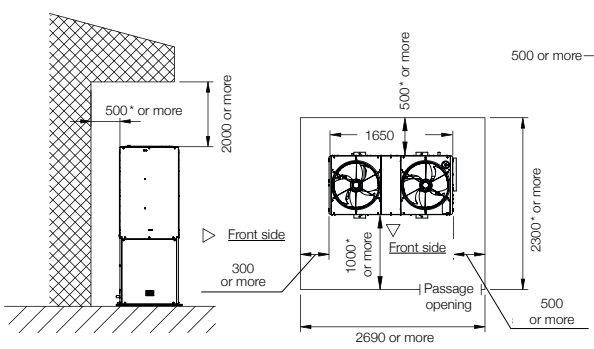
* See page 84 for dimensions with vibration dampers.
** See page 82 for dimensions with air guards.

GAS ENGINE HEAT PUMP

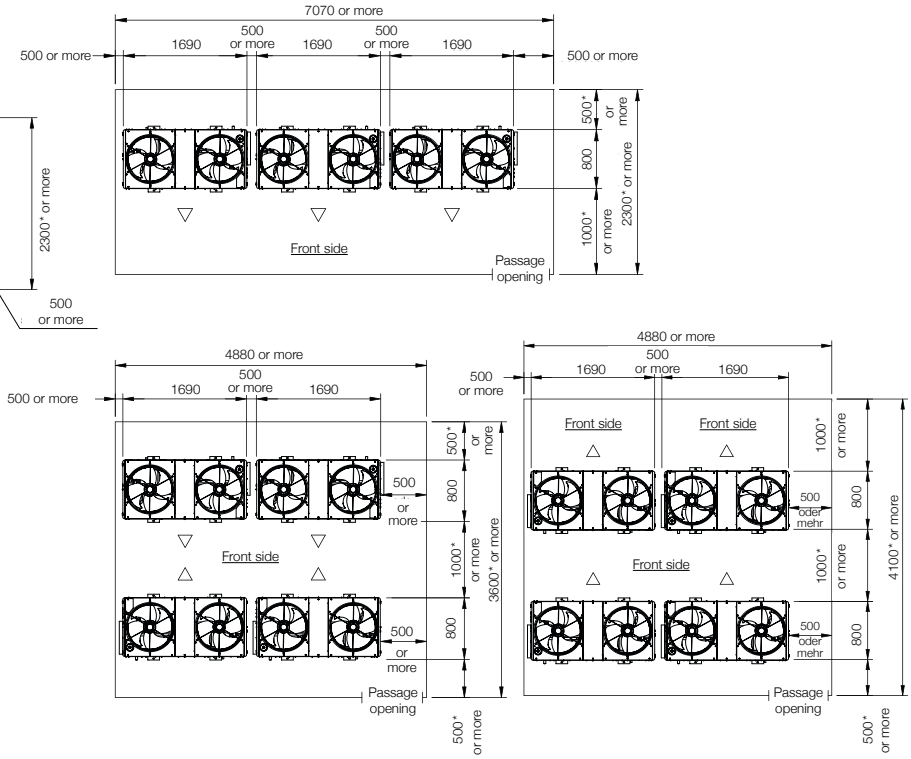
SERVICING SPACE REQUIREMENTS

ENCP 450 / 560 J

Single unit installation

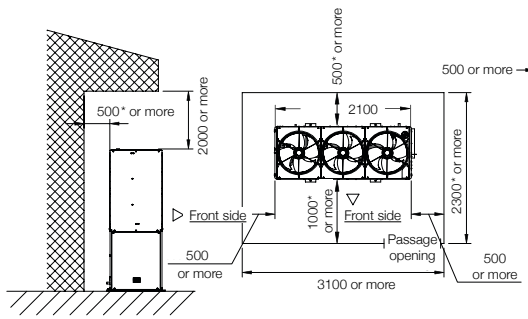


Multiple unit installation

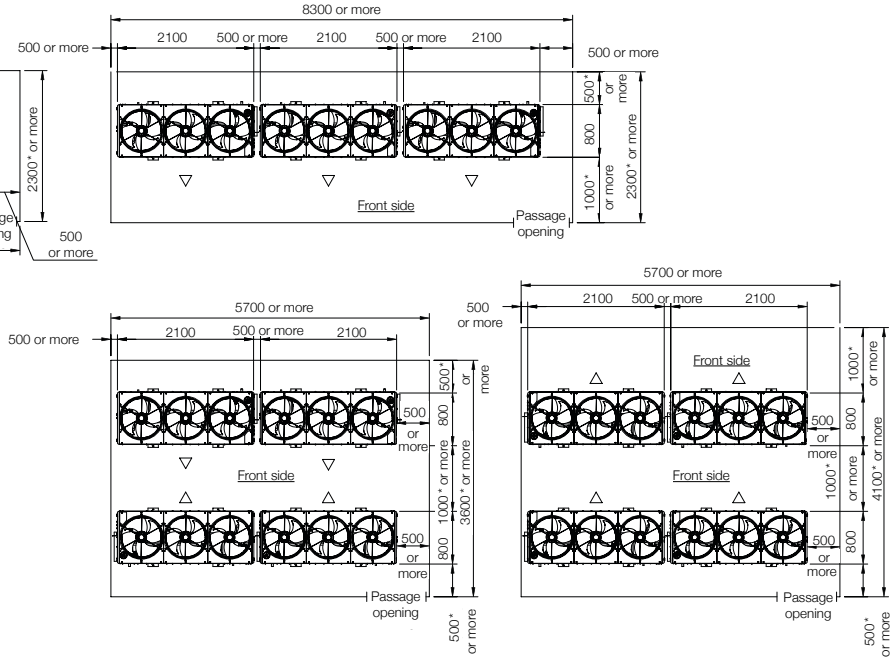


ENCP 710 / 850 J

Single unit installation



Multiple unit installation



* See page 82 for clearances with air guards.

HYDROBOX 3.2

HYDRAULIC MODULE

The Hydrobox installed in the interior area transfers the required heating and cooling capacity from the gas driven heat pump to the water based heating and cooling system.

As a result of the internal control, both the gas engine heat pump and the integrated water circulation pump are operated in an energy efficient manner. In addition, the Hydrobox faciliates optimum system control up to the buffer tanks including control of the optional heat recovery as well as cooling-side and heating-side peak-load generators.

- ✓ Smaller and lighter than previous model 3.1
- ✓ The controller forms the interface between the BMS and the gas engine heat pump
- ✓ Energy efficient pump (cl. A) integrated
- ✓ No frost protection measures necessary for the lines between the gas engine heat pump (outdoor unit) and Hydrobox (indoor unit)
- ✓ The integrated buffer management of the Hydrobox controls the gas engine heat pump, preventing low partial load ranges and increasing the COP
- ✓ The Hydrobox can be adjusted to different requirements using 18 input configurations and additional options
- ✓ Optionally, a complete input of parameters is possible via remote monitoring

HYDROBOX 3.2

TECHNICAL DATA

TÜV certified

HB...V(P)J3.2			450	560	710	850
Rated heating capacity [1]	A7 / W35	kW	46	52	70	81
Heating capacity [1]	A-10 / W45	kW	43	48	55	64
Rated cooling capacity [1]	A35 / W7	kW	36	45	53	64
Cooling capacity [1]	A35 / W15	kW	46	57	68	82
Dimensions	H × W × D	mm	930 × 785 × 520			
Weight		kg	153	153	172	172
Rated volume flow	Heating, Δ t = 5 K [2]	m³/h	8.0	9.0	12.0	14.0
Rated pressure loss	Version VJ, including strainer	kPa	19	24	17	21
External static pressure (ESP)	Version VPJ, standard pump	kPa	75	63	66	52
	Version VPJ, high ESP pump	kPa	86	76	95	82
	Version VPJ, extra high ESP pump	kPa	121	110	108	96
Power consumption	Version VPJ, standard pump	kW	0.43	0.43	0.53	0.53
	Version VPJ, high ESP pump	kW	0.53	0.53	0.71	0.71
	Version VPJ, extra high ESP pump	kW	0.71	0.71	0.86	0.86
Electrical connection	Power supply	V / Ph / Hz	230 / 1 / 50			
Control range		-	20–100 %			
Water outlet temperature	Heating / cooling	°C	27–50 / 6–18			
Water inlet temperature	Max. / Min.	°C	45 / 10			
Environmental conditions	Temperature	°C	+5 to +35			
	Max. humidity	% r.h.	90			
Pipe connections	Water pipes	Inch	1½		2	
	Refrigerant gas / liquid pipe [3]	Inch	1 ⅛ / ⅝		1 ¼ / ¾	
Sound pressure level		dB(A)	33	35	33	35
Scope of delivery						
Standard (supplied loose)	2 connection adapters with accessories (refrigerant side) 2 counter flanges with accessories (water side) 1 safety group (water side) 1 strainer (water side) 2 cable temperature sensors as immersion sensors (for heating and cooling buffer tank)					
Optional accessories	High ESP pump, type Y-HB-PU1-450/560 or 710/850 Extra high ESP pump, type Y-HB-PU2-450/560 or 710/850 Connection frame, type Y-HB-RAH Joint feet, type Y-HB-FUE Outside temperature sensor, type Y-HB-DPUT Cable temperature sensor as a pipe-mounted sensor, type Y-HB-NTC-WS Combined Modbus / BACnet card, type Y-HB-BAC					

1) Capacities are calculated for a standard indoor/outdoor unit combination with a 7.5 m piping length and 0 m level diff erence. These are Hydrobox water outlet temperatures.

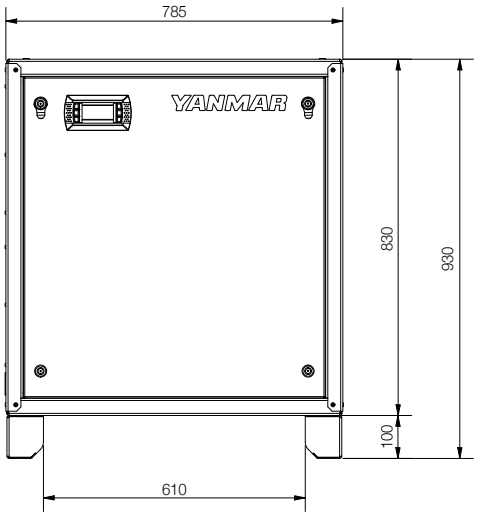
2) The Δ t can be adjusted in the range 5–10 K.

3) The dimensions of the refrigerant connection pipes can be found on page 14 or 20.

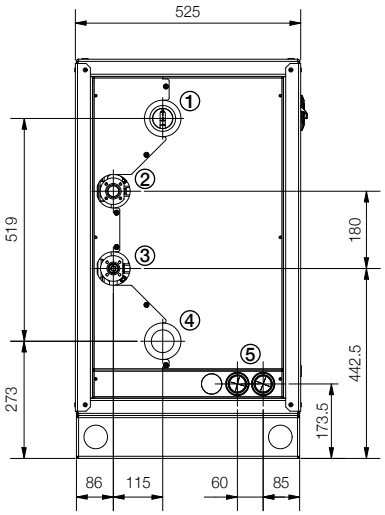
HYDROBOX 3.2

DIMENSIONS / INSTALLATION AND SERVICING SPACE REQUIREMENTS

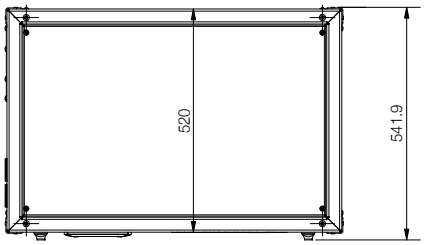
Dimensions



Front view



Left view

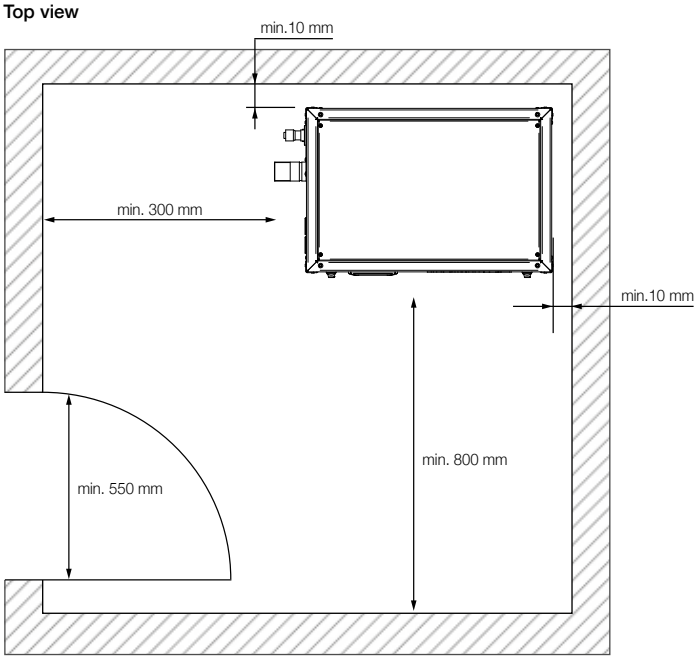


Top view

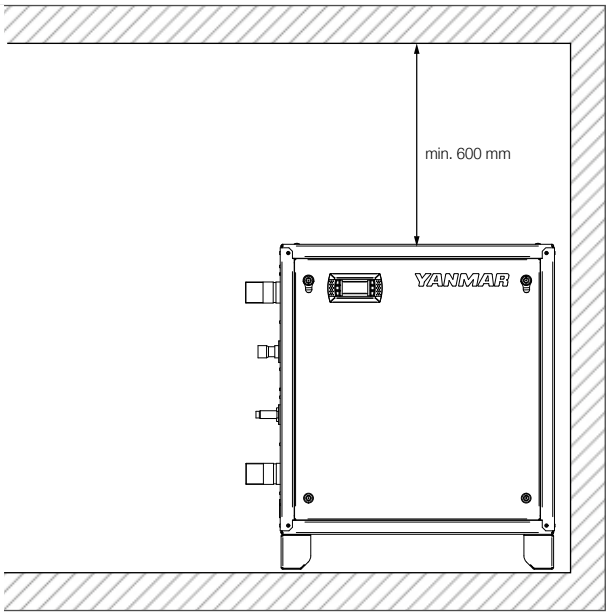
1 Water inlet
2 Hot gas pipe/suction pipe
3 Liquid pipe
4 Water outlet
5 Cable entries

Installation and servicing space reqirements

Top view



Front view



HYDROBOX 3.2

ACCESSORIES

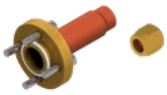
Standard scope of delivery

Strainer, water side
(HB450/560: 1 ½ ″, HB710/850: 2 ″)

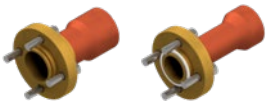
2 counter flanges, water side, PN6, internal thread, with accessories (HB450/560: 1 ½ ″, HB710/850: 2 ″)

Safety group, water side, consisting of pressure gauge, safety valve 3 bar and quick air relief valve

2 cable temperature sensors as immersion sensors (for heating and cooling buffer tank)



2 connection adapters, refrigerant side, with accessories
HB450/560: 1 ⅛ ″ (28.6 mm) (solder flange)
⅝ ″ (15.9 mm) (flare nut)



HB710/850: 1 ¼ ″ (31.8 mm) (solder flange)
¾ ″ (19.1 mm) (solder flange)

Optional

Circulation pump with high ESP, factory fitted
Type Y-HB-PU1-450/560
Type Y-HB-PU1-710/850

Circulation pump with extra high ESP, factory fitted
Type Y-HB-PU2-450/560
Type Y-HB-PU2-710/850

Connection frame, anthracite, for the stacked installation of a maximum of two hydroboxes (total height 1.768 mm)
Type Y-HB-RAH

4 joint feet, height adjustable
Type Y-HB-RAH

Outside temperature sensor
Type Y-HB-DPUT

Cable temperature sensor as a pipe mounted sensor
Type Y-HB-NTC-WS

Combined Modbus/BACnet interface card
Type Y-HB-BAC

REFRIGERANT PIPEWORK

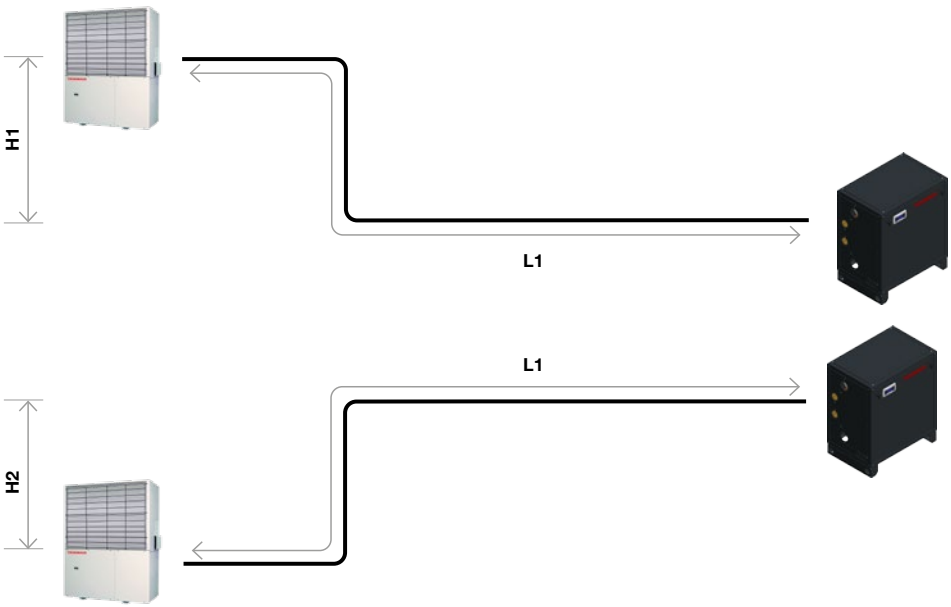
DIMENSIONS AND PIPE LENGTHS

Pipe dimensions

ENCP + HB		Connection pipes	
		Liquid pipe *	Refrigerant gas pipe *
450	Inch (mm)	½ (12.7) **	1 ⅛ (28.6)
560	Inch (mm)	⅝ (15.9)	1 ⅛ (28.6)
710	Inch (mm)	¾ (19.1)	1 ¼ (31.8)
850	Inch (mm)	¾ (19.1)	1 ¼ (31.8)

* Larger dimensions possible depending on the pipe length.
** The connection to the Hydrobox is to be reduced from ⅝ ″ (15.9 mm) to ½ ″ (12.7 mm).

Length and height differences



ENCP + HB			Connection pipes	
L1	Maximum permitted pipeline length	actual	m	55
		equivalent *	m	67
H1	Maximum permitted height difference		m	25
H2			m	25

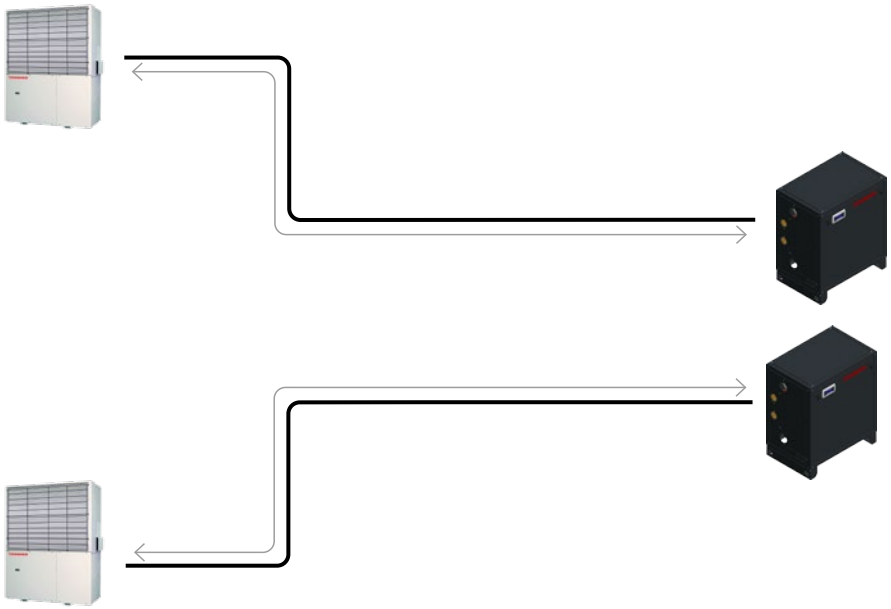
* Taking into consideration installed fittings, valves, bends, T-pieces, reductions etc.

NOTES: The Hydrobox and VRF indoor units cannot be operated simultaneously on a gas engine heat pump.
The models HB 450–850 V(P)J3.2 can only be operated in single operation.
Exceeding the maximum permitted pipe length invalidates the warranty of the gas engine heat pump and the Hydrobox.

REFRIGERANT PIPEWORK

CORRECTION FACTORS AND REFRIGERANT CHARGE

Correction factors heating and cooling mode



Variations in performance arise owing to the length of the refrigerant connection pipes and the height difference between the gas engine heat pump and the Hydrobox. The correction factors for heating and cooling mode can be found in the manuals.

Calculation of the additional refrigerant charge

The additional refrigerant charge R should be calculated on the basis of the diameter and length of the liquid pipelines and rounded up or down to 0.1 kg.

Additional refrigerant charge

ENCP + HB		450	560	710	850
R410A factory charge	kg	11.8	11.8	11.8	11.8
Correction quantity A	kg	4	4	9.5	9.5
Correction factor f*	kg/m	0.11	0.17	0.25	0.25

*Relative to standard dimensioning

Additional refrigerant charge
R [kg] = A + (L × f)
L: Pipe length

Example calculation for ENCP 710 J with HB 710 V(P)J3.2 with piping length of 10 m:
R = 9.50 kg + (10 m x 0.25 kg / m) = 12.00 kg

Legal notices	
	✓ **Obligation to indicate the overall refrigerant charge on the outdoor unit** If partly fluorinated hydrocarbon (HFC) refrigerant is filled, the type and quantity must be permanently indicated on the sticker provided for this purpose on the outdoor unit (in proximity of the fuel gas connection), e.g. with a wipe-proof permanent marker.
	✓ **Released refrigerant must be collected and disposed of** It is forbidden to deliberately let refrigerant escape into the atmosphere. Released refrigerant must be collected and disposed of by authorised authorities or companies.

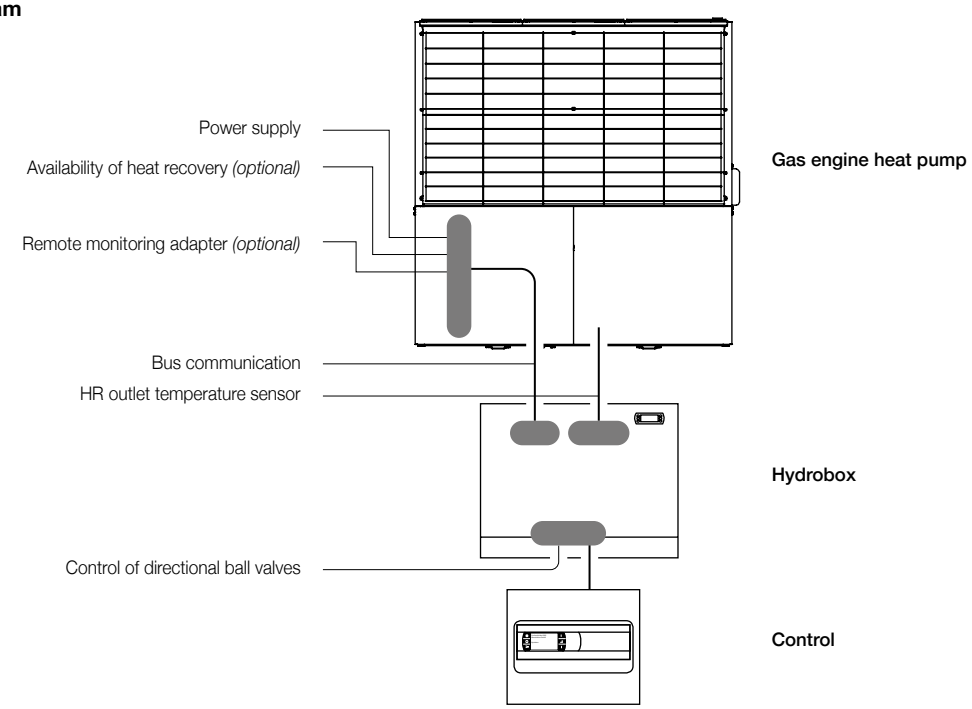
WIRING

GAS ENGINE HEAT PUMP + HYDROBOX

Item	Name	Start	Cable type *	Voltage	Objective	Comments
Gas engine heat pump						
1	Power supply	Switch cabinet	YSLY-JZ 3 x 2.5 mm²	AC 230 V	GEHP	ENCP 450 / 560: 0.87 / 0.99 kW, fuse 20 A slow blow * ENCP 710 / 850: 1.45 / 1.66 kW, fuse 20 A slow blow *
2	Remote monitoring	Remote monitoring adapter	LiYCY 2 x 0.75 mm²		GEHP	Optional component: see accessories
3	Availability of heat recovery	GEHP	YSLY 3 x 1.0 mm²	max. 440 V, 4 A	BMS	Thermostatic release (only in case of installed heat recovery)
Connection gas engine heat pump / Hydrobox						
4	Communication	GEHP	LiYCY 2 x 0.75 mm²		HB	Bus communication
5	Temperature sensor heat recovery outlet	GEHP	YSLY 2 x 0.75 mm²		HB	Sensor pre-installed in GEHP (only in case of installed heat recovery)
Hydrobox						
6	Power supply	Switch cabinet	NYM-J 3 x 1.5 mm²	AC 230 V	HB	Fuse 10 A*
7	Communication cascade	HB	LiYCY 2 x 0.75 mm²		HB	Bus communication
8	Release of the external circulation pump	HB	LiYCY 5 x 0.75 mm²		Pump	Only in the version without pump (VJ)
9	Speed control of the external circulation pump	HB			Pump	Only in the version without pump (VJ)
Further cables depending on the selected input configuration (see technical installation manual Hydrobox), minimum capacity request however (input configuration 1):						
10	Capacity request	BMS	LiYCY 2 x 0.75 mm²	DC 0–10 V	HB	Analogue signal 1 x 0–10 V
11	Operation signal	BMS	YSLY 5 x 0.75 mm²	AC 24 V	HB	open = off
12	Mode specification Cooling / heating	BMS			HB	Closed = cooling, open = heating
13	Quiet mode	BMS			HB	
14	Acknowledgement	BMS			HB	Remote acknowledgement
15	Operation notification 1	HB	YSLY 5 x 1.5 mm²	max. 250 V, 2 A cos. ph. 0.6	BMS	potential-free (configurable)
16	Operation notification 2	HB			BMS	potential-free (configurable)
17	General error notification	HB			BMS	Collective error message (closed = error-free)
18	Directional ball valves cooling / heating	HB	NYM-J 5 x 1.5 mm²	AC 230 V	Ball valves	Closed = cooling

* These are recommendations. The dimensioning and implementation must be carried out in accordance with local regulations.

Diagram



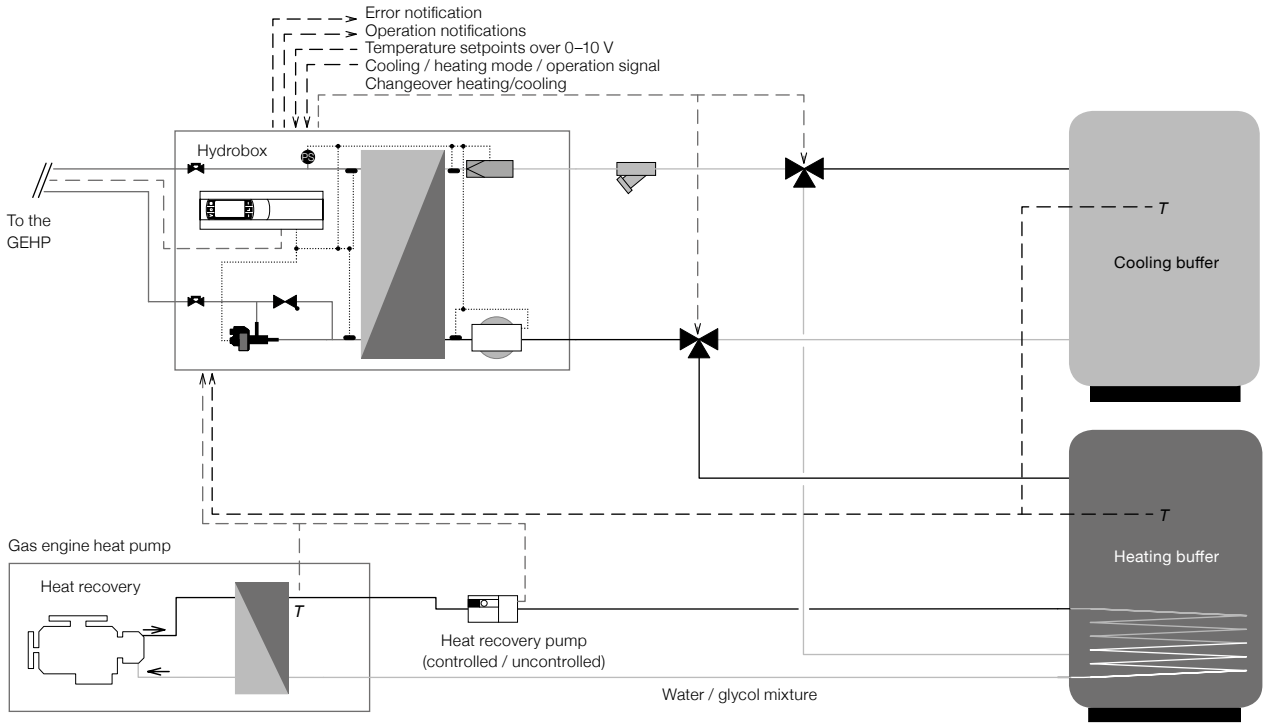
CONTROL

INPUT CONFIGURATIONS

Input configur.	Description	Control	Additional options
1	External capacity request over 0–10 V	External BMS	
2	External capacity request over 4–20 mA	External BMS	
3	External temperature setpoints over 1 x 0–10 V (1 buffer tank)	External BMS	Request for extra device (boiler/chiller)
4	External temperature setpoints over 1 x 4–20 mA (1 buffer tank)	External BMS	Request for extra device (boiler/chiller)
5	External temperature setpoints over 1 x 0–10 V (2 buffer tanks)	External BMS	Heat recovery control control Request for extra device (boiler/chiller)
6	External temperature setpoints over 1 x 4–20 mA (2 buffer tanks)	External BMS	Heat recovery control control Request for extra device (boiler/chiller)
7	External temperature setpoints over 2 x 0–10 V (1 buffer tank)	External BMS	Request for extra device (boiler/chiller)
8	External temperature setpoints over 2 x 4–20 mA (1 buffer tank)	External BMS	Request for extra device (boiler/chiller)
9	Internally calculated, sliding temperature (1 buffer tank)	Outside temperature sensor	Request for extra device (boiler/chiller)
10	Internally calculated, sliding temperature setpoints (2 buffer tanks)	Outside temperature sensor	Heat recovery control control Request for extra device (boiler/chiller)
11	Fixed temperature setpoints (1 buffer tank)	Internal	Request for extra device (boiler/chiller)
12	Fixed temperature setpoints (2 buffer tanks)	Internal	Heat recovery control control Request for extra device (boiler/chiller)
13	Internally calculated, sliding temperature setpoints via HPM* (1 buffer tank)	HPM* + outside temperature sensor	Request for extra device (boiler/chiller)
14	Internally calculated, sliding temperature setpoints via HPM* (2 buffer tanks)	HPM* + outside temperature sensor	Heat recovery control control Request for extra device (boiler/chiller)
15	External capacity request and external outlet temperature setpoint over 0–10 V	External BMS	(Pump control)
16	External capacity request and external outlet temperature setpoint over 4–20 mA	External BMS	(Pump control)
17	External temperature setpoints and external outlet temperature setpoint over 0–10 V	External BMS	(Pump control)
18	External temperature setpoints and external outlet temperature setpoint over 4–20 mA	External BMS	(Pump control)

* Note: Heat pump manager (HPM) only available for Germany.

Example: Input con i guration 5 - external temperature setpoints over 0–10 V with heat recovery



CONTROL

CASCADE MANAGER AND CONNECTION

Cascade manager

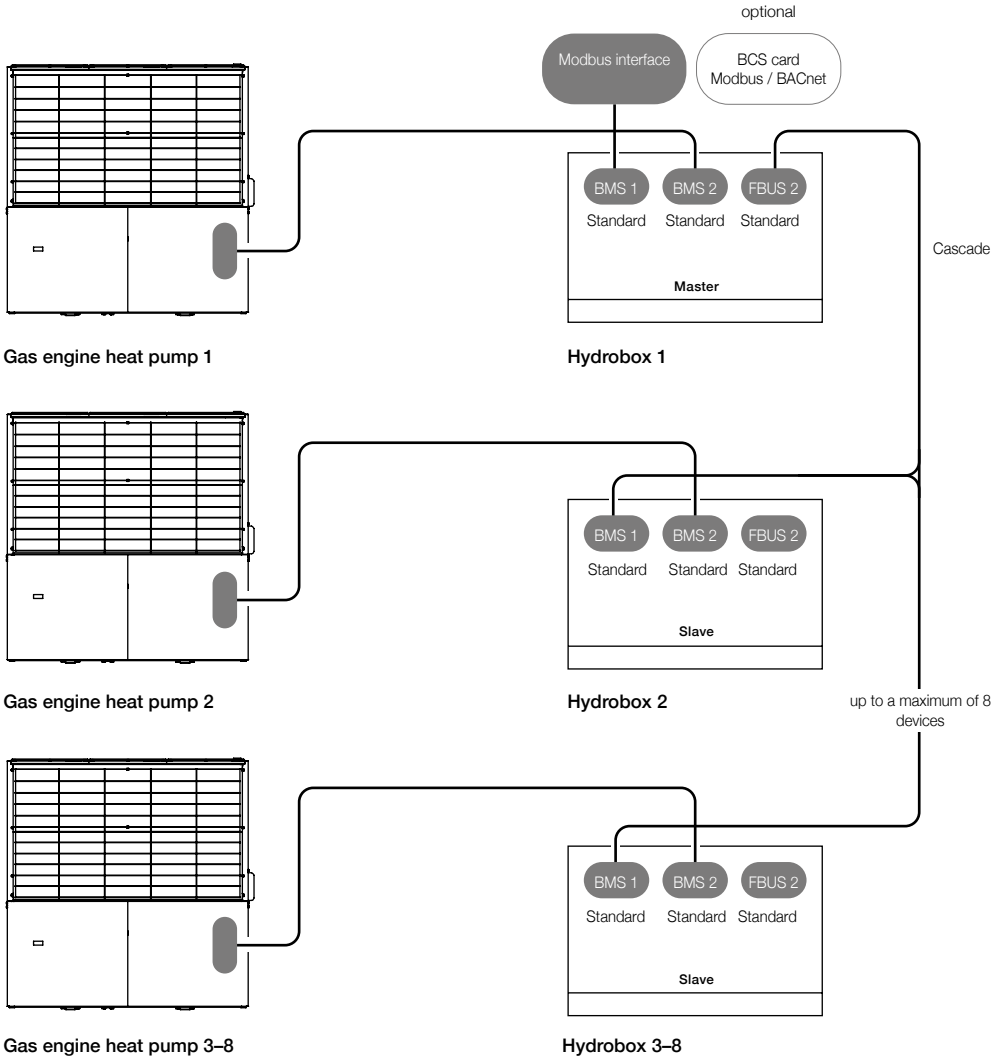
Up to eight gas engine heat pumps can be controlled with the cascade manager which is already integrated. The base load changes which can be switched off are managed automatically according to the “First in - first out” principle. All requests can be made via external capactiy request and temperature setpoints with a mode preselection or via the internal control. In addition, simultaneous heating and cooling mode is possible with a corresponding input configuration.

Note: The cascade management can also function via the superordinate building management system – every Hydrobox can then be con-trolled independently.

Connection of the components

The cascade is controlled as standard, just like every Hydrobox in general, as previously described, via analogue and digital signals. In addition, the management Hydrobox (Master) has a Modbus interface (see next page).

Connection GEHP to HB



INTERFACES

BACNET AND MODBUS

Bus interfaces

The control and parameter transfer to a superordinate building management system can occur via the integrated Modbus interface (Modbus RTU). When using the interface in combination with the cascade manager, only the management of the Hydrobox (Master) can be controlled and read out. In this case, only selected information is transferred by the subordinate Hydroboxes (Slaves) to this Master via the internal bus.

An interface module is optionally available for Modbus TCP/IP, Bacnet and SNMP.

The table only shows a selection of the available parameters. The complete list is available as an Excel file upon request.

Variable	Description	Direction	UOM	Min	Max	Default	Data Type	BCS Type	BCS Ofs	BCS Idx	BCS Dir	BCS Dir2
OU B release	Compressor may be released	Only Output	-	0	1	0	B	Digital		152	Output	Output
OU B setpoint output	Temperature setpoint	Only Output	-	0	1	0	B	Digital		82	Output	Output
OU B setpoint temperature	Temperature setpoint	Only Output	-	0	1	0	B	Digital		81	Output	Output
OU setpoint Heating limited	Temperature setpoint	Only Output	-	-99.9	99.9	0.0	A	Ana-logue	0.1	45	Output	Output
OU setpoint Cooling limited	Temperature setpoint	Only Output	-	-99.9	99.9	0.0	A	Ana-logue	0.1	46	Output	Output
A001 output	Output value analogue output 1	Only Output	-	0	9999	0	I	Integer		11	Output	Output
…	…	…	…	…	…	…	…	…	…	…	…	…

External bus connection Modbus RTU

Item	Name	Start	Cable type*	Voltage	Target	Comments
1	Bus communication	BMS	LiYCY 2 × 0.75 mm² (2 × 1.00 mm²)		HB BMS1	In the case of cascades, only available in the master!
The following input must also be used:						
2	Release	BMS	YSLY 2 × 0.75 mm²	AC 24 V	HB	open = off

* These are recommendations! The dimensioning and implementation must be carried out in accordance with local regulations.

External bus connection BACnet

Item	Name	Start	Cable type*	Voltage	Target	Comments
1	Bus communication	BMS	CAT5, CAT5E, CAT6		HB BMS1	In the case of cascades, only available in the master!
The following input must also be used:						
2	Release	BMS	YSLY 2 × 0.75 mm²	AC 24 V	HB	open = off

* These are recommendations! The dimensioning and implementation must be carried out in accordance with local regulations.

AT A GLANCE

GAS ENGINE HEAT PUMP + HYDROBOX 3.2

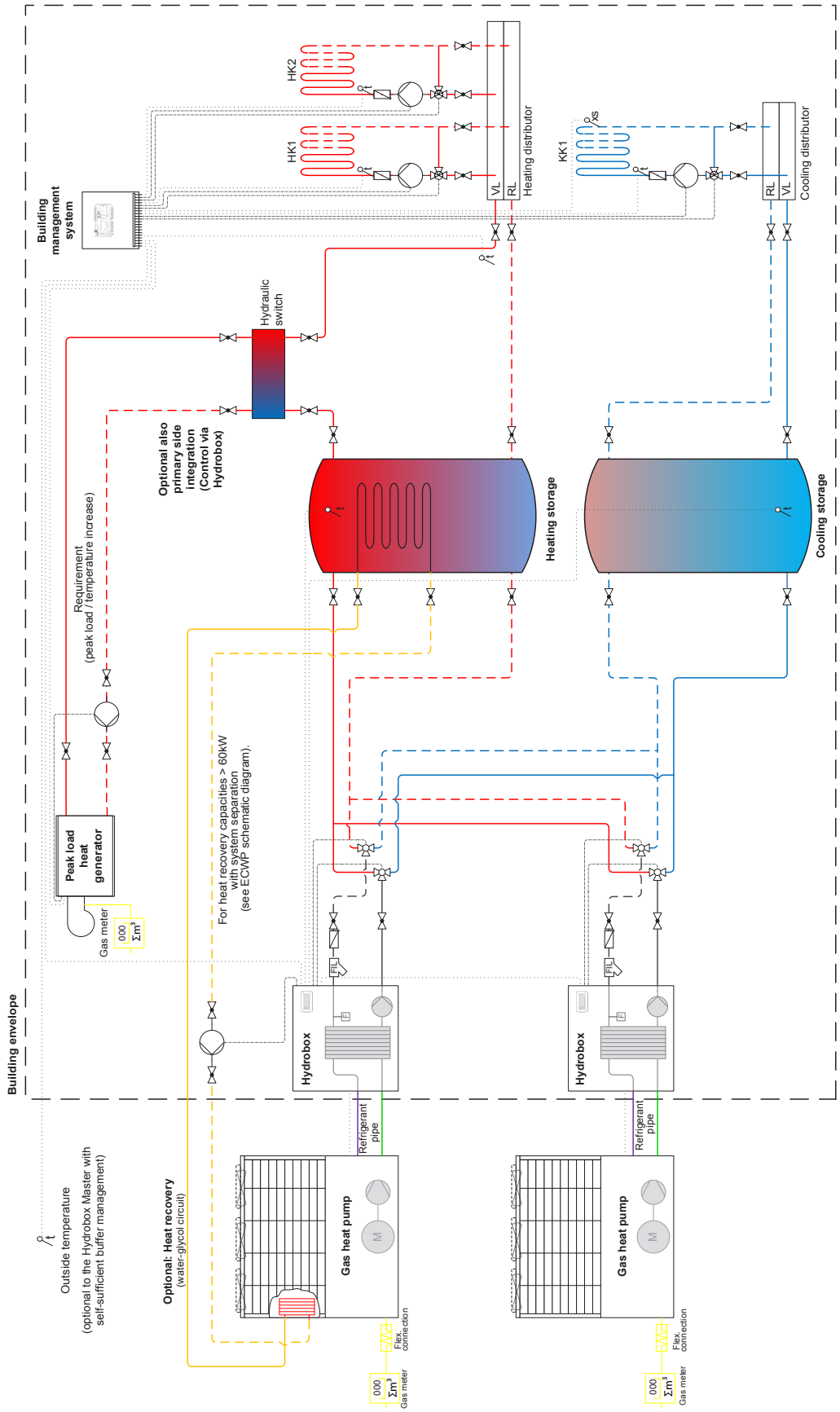
TÜV certified

System index			450	560	710	850
Overall system						
Heating capacity	A-10 / W45 [1]	kW	43	48	55	64
Cooling capacity	A35 / W7 [1]	kW	36	45	53	64
$\eta_{s,h}$ [2]		%	127	130	130	132
Energy efficiency class [3]	Heating (W35)		A+	A+	A+	A+
Gas engine heat pump						
Dimensions [4]	H × W × D	mm	2,170 × 1,690 × 800		2,170 × 2,100 × 800	
Weight	(without optional heat recovery)	kg	880	890	1,080	1,080
Electrical connection	Power supply	V / Ph / Hz	230 / 1 / 50			
	Fuse [5]	A	20, slow blow (C-Automat or Neozed)			
Fuel connection	Gas type		Natural gas group II			
	Max. gas consumption (LHV)	kW	69	75	77	86
	Gas supply pressure	mbar	20			
	Gas connection	Inch	R ¾			
			on site: flexible gas tube, filter			
Refrigerant pipe connections	Refrigeration gas / liquid pipe	Inch	1 ⅛ / ½	1 ⅛ / ⅝	1 ¼ / ¾	1 ¼ / ¾
Exhaust drain pipe connection [6]		mm	15			
Sound level	Sound pressure level (max.)	dB(A)	62	62	66	66
	Sound power level (max.)	dB(A)	82	82	84	85
Operation range	Outside temperature heating	°C DB	-20 to +35			
	Outside temperature cooling	°C DB	0 to +46 (-10 to +46) [7]			
Hydrobox 3.2						
Dimensions	H × W × D	mm	930 × 785 × 545			
Weight		kg	153	153	172	172
Rated volume flow	Heating, Δ t = 5 K	m³/h	8.0	9.0	12.0	14.0
Rated pressure loss	Version VJ	kPa	15	19	22	30
External static pressure (ESP)	Version VPJ	kPa	75	63	66	52
Electrical connection	Power supply	V / Ph / Hz	230 / 1 / 50			
	Fuse [5]	A	10			
Pipe connections	Water pipes	Inch	2			
	Refrigerant gas / liquid pipe	Inch	1 ⅛ / ⅝ [3]		1 ¼ / ¾	
Sound level	Sound pressure level (max.)	dB(A)	33	35	33	35
Water outlet temperature	Heating / cooling	°C	+27 to +50 / +6 to +18			
Water inlet temperature	Max. / Min.	°C	45 / 10			
Connection GEHP + Hydrobox						
Refrigerant pipes	Refrigerant gas / liquid pipe	Inch	1 ⅛ / ½	1 ⅛ / ⅝	1 ¼ / ¾	1 ¼ / ¾
		mm	28.6 / 12.7	28.6 / 15.9	31.8 / 19.1	31.8 / 19.1
Max. distances	Length	m	55			
	Height	m	25			
Bus communication	(also for cascade HB - HB)	mm²	LiYCY 2 × 0.75			

1) These are water outlet temperatures.
2) In accordance with EU Regulation 813 / 2013 (LOT1).
3) In accordance with EU Regulation 811 / 2013.
4) See accessories for dimensions with vibration dampers, air guards or air direction adjuster.
5) These are recommendations; the dimensioning must be carried out in accordance with local regulations.
6) The exhaust drain must be removed.
7) See accessories with air guards.
8) For the associated gas engine heat pump ENCP450J, the liquid connection must be reduced to ½ ″ (12.7 mm).

SYSTEM DIAGRAM EXAMPLE

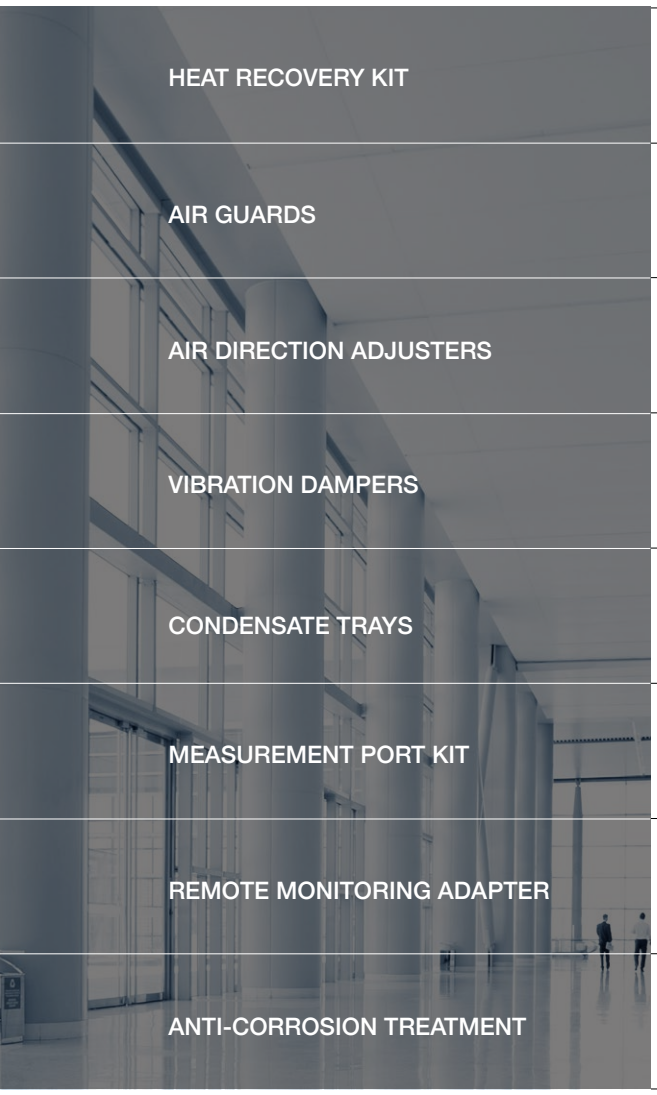
GAS ENGINE HEAT PUMP + HYDROBOX + HEAT PUMP MANAGER



NOTE: This example diagram is not a replacement for specialist planning and is not an implementation plan. Some necessary mounting parts and components have been dispensed with for the sake of clarity. The example diagram should by no means be considered complete! Errors expected.

ACCESSORIES

FOR GAS ENGINE HEAT PUMPS / GAS DRIVEN REFRIGERATORS



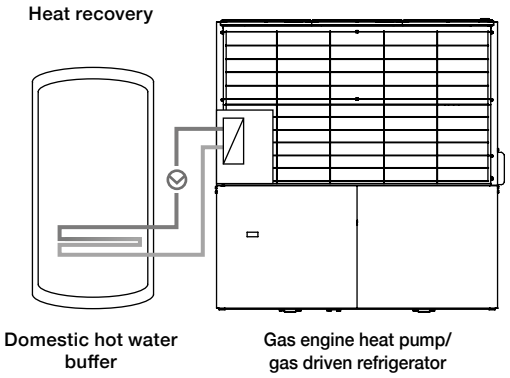
HEAT RECOVERY KIT	**HEAT RECOVERY KIT ... J - HEATING DURING COOLING MODE** For ENCP ... J (-R)	**PAGE 81**
AIR GUARDS	**ARD ... H - FOR COOLING MODE AT OUTSIDE TEMPERATURE. < 10 °C** For ENCP ... J (-R) / ECWP ... J / EZFP ... J	**PAGE 82**
AIR DIRECTION ADJUSTERS	**FKA ... H - FOR OPERATION UNDER PROJECTIONS** For ENCP ... J (-R) / ECWP ... J / EZFP ... J	**PAGE 83**
VIBRATION DAMPERS	**SD / SDS / SDI ... - FOR DECOUPLING FROM THE BUILDING** For ENCP ... J (-R) / ECWP ... J / EZFP ... J	**PAGE 84**
CONDENSATE TRAYS	**RGA850H1 - FOR COLLECTING THE DEFROST DRAIN** For ENCP ... J (-R) / ECWP ... J / EZFP ... J	**PAGE 85**
MEASUREMENT PORT KIT	**FUE3EWEDCS-CV50 - WHEN USING AN EXHAUST SYSTEM** For ENCP ... J (-R) / ECWP ... J / EZFP ... J	**PAGE 86**
REMOTE MONITORING ADAPTER	**CLCW2B1 - FOR REMOTE MONITORING OF AIR-TO-WATER COMPACT AND AIR-TO-AIR VRF** FOR ECWP ... J / ENCP ... J / EZFP ... JC	**PAGE 87**
ANTI-CORROSION TREATMENT	**AKS-L1 / L2 - CORROSION PROTECTION COATING** For ENCP ... J (-R) / ECWP ... J / EZFP ... J	**PAGE 88**

HEAT RECOVERY KIT

HEAT RECOVERY KIT 450 / 560 / 710 / 850 J

While the engine waste heat of the gas engine heat pump is used in heating mode primarily for defrosting phases or monovalent heating operation, this energy is freely available in cooling mode. This heat can be used externally via an integrated heat exchanger, for example for heat storage or for heating domestic hot water. This is also the case for excess engine waste heat which arises during heating mode.

- ✓ Extraction of engine waste heat in cooling mode - temperature level 65–70 °C
- ✓ Simultaneous heating and cooling
- ✓ Improving energy efficiency



Heat recovery kit ... J		450	560	710	850
Rated heating capactiy *	kW	16	20	25	30
Min. water outlet temperature	°C	70	70	70	70
Rated volume flow **	m³/h	1.09	1.36	1.70	2.04
Rated pressure loss	kPa	0.6	0.8	1.1	1.4
Water content	l	3.3	3.3	4.0	4.0
Glycol proportion	%	35	35	35	35
Connections inlet / outlet (CU)	mm	35 x 1.5	35 x 1.5	35 x 1.5	35 x 1.5
Available ex-works as standard with ECWP 710 J and ENCP 450–850 J-R					
Not available for EFZP 560 / 850 JC					

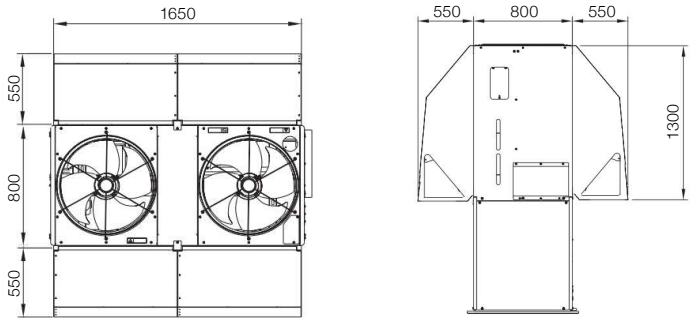
* The nominal heating capacity is based on 100 % full load operation cooling mode and can vary depending on the load and outside temperature between 0 kW and the specified value.
** Outlet temperature 65 °C / Inlet temperature 55 °C.

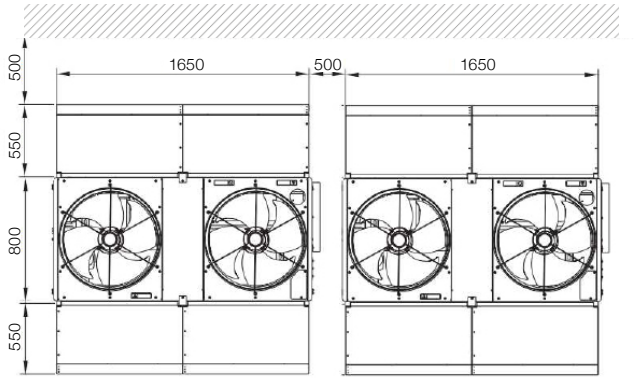
AIR GUARDS

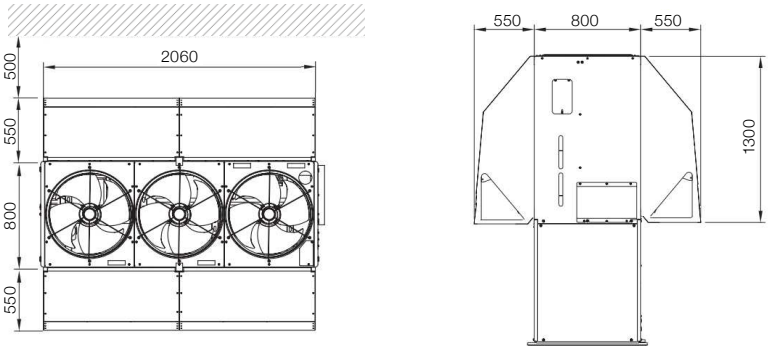
ARD 560 / 850 H

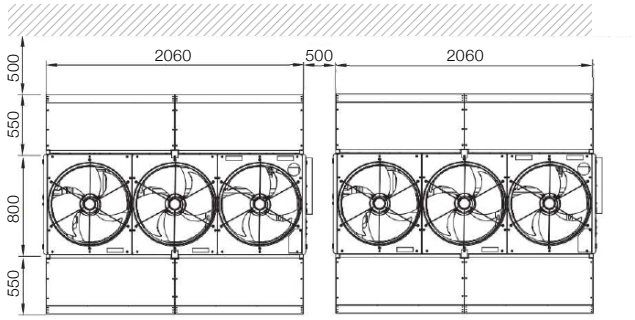
The air guards enable cooling mode in the case of low outside temperatures (see technical data).

ARD ... H		560	850
Suitable for outdoor unit		ENCP 450 / 560 J // EFZP 560 JC	ENCP 710 / 850J // ECWP 710 J // EFZP 850 JC
Weight	kg	2 x 25	2 x 29.5
Mandatory with ENCP 450–850 J-R.			







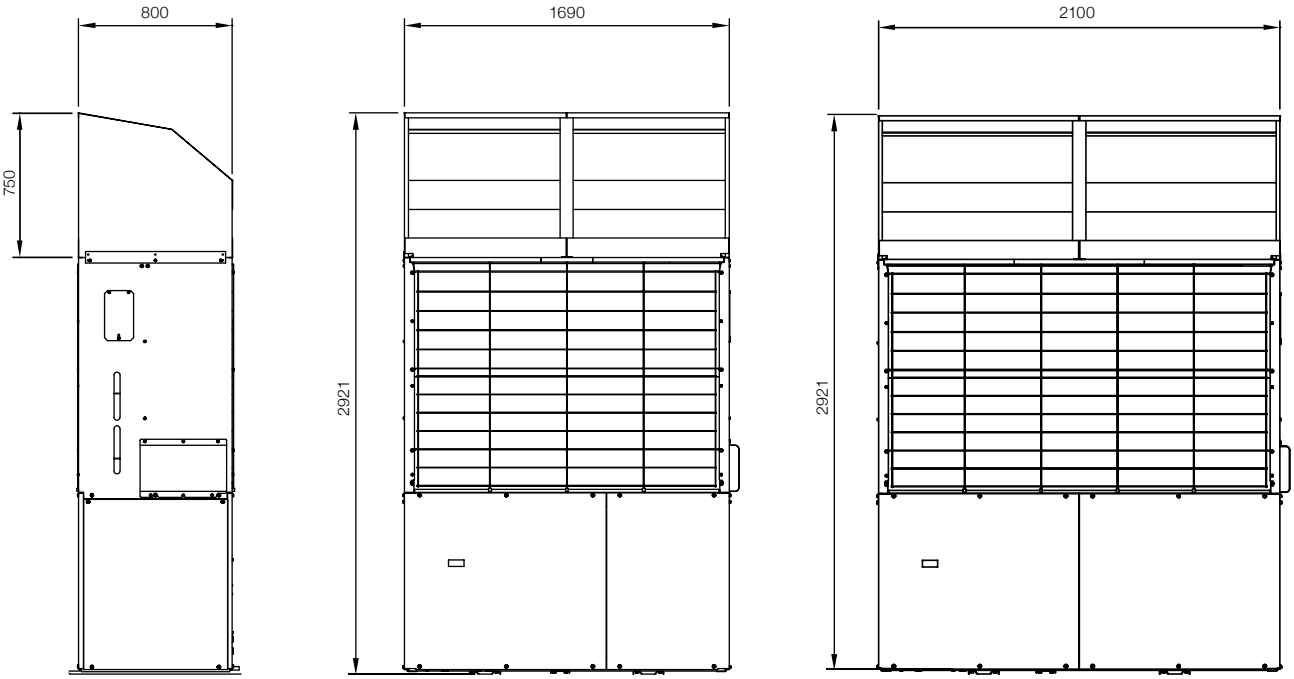


AIR DIRECTION ADJUSTER

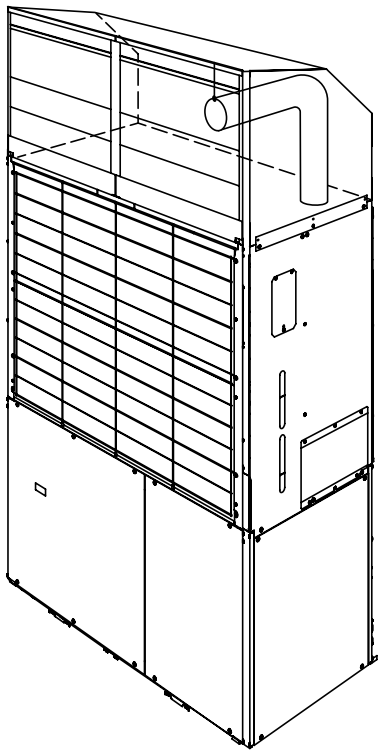
FKA 560 / 850 H

The air direction adjuster directs the outgoing air forwards in a targeted manner.

FKA ... H		560	850
Suitable for outdoor unit		ENCP 450 / 560 J (-R) // EFZP 560 JC	ENCP 710 / 850 J (-R) // ECWP 710 J / EFZP 850 JC
Weight	kg	29	33



In order to prevent exhaust gases freezing within the air direction adjuster, the exhaust pipe should be extended according to the following diagram (components on site).



NOTE: Please observe the exhaust gas evacuation.

VIBRATION DAMPERS

SD / SDS / SDI 450 / 560 / 710 / 850

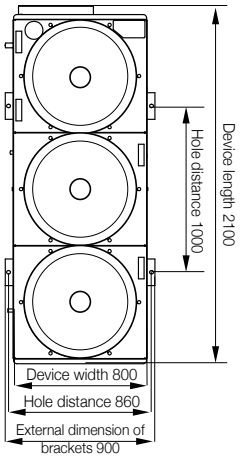
The vibration dampers reduce the transfer of structure-borne noise to the installation surface.

SD ...		450 / 560	710 / 850
Suitable for outdoor units		ENCP 450 / 560 J (-R) // EFZP 560 J	ENCP 710 / 850 J (-R) // ECWP 710 J // EFZP 850 J
Degree of insulation	%	79.6 to 99.1	76.2 to 99.0
	dB	13.8 to 40.9	12.5 to 40.0

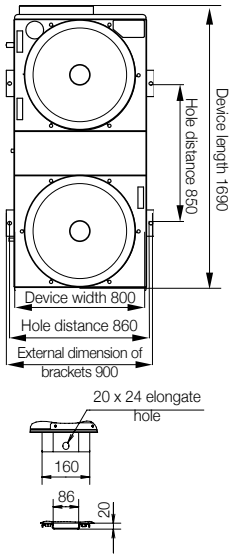
ENCP 710 / 850 J (-R)
ECWP 710 J
EZFP 850 J

ENCP 450 / 560 J (-R)
EZFP 560 J

Top view

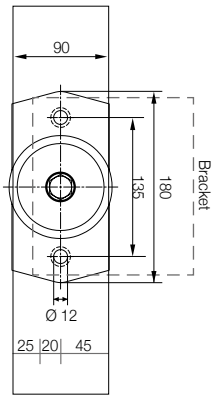


Top view

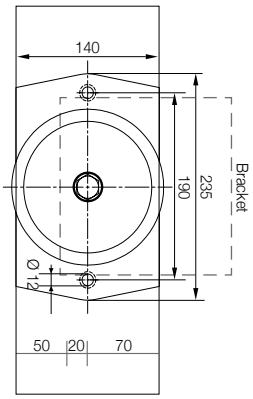


View D mounting bracket

SD



SDS



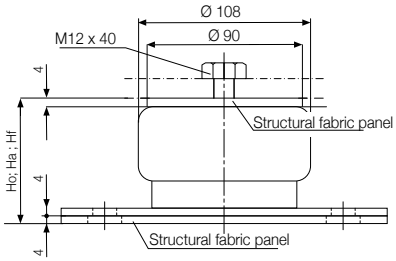
CAUTION:
If attachment with screws is not possible, support clamps can be used.

When rotating the vibration dampers, please consider the entire surface. The width and the distance of the supports to one another must be adjusted.

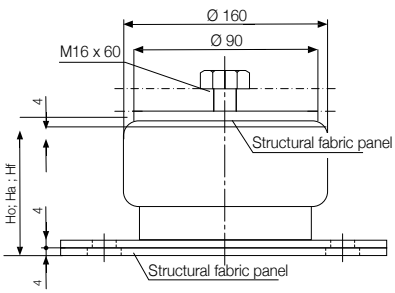
Type	Nominal load capacity F	Spring constant k_v	Spring constant k_h	Natural frequency	Height H_0	Height H_A	Height H_F
	kN	kN / mm	kN / mm	Hz	mm	mm	mm
SD 450 / 560	2.64	0.176	0.259	4.0	72	65	57
SD 710 / 850	3.16	0.243	0.361	4.4	71	65	58
SDS 450 / 560	4.10	0.079	0.069	2.2	156	153	104
SDS 710 / 850	4.10	0.079	0.069	2.2	156	153	104

H_0 : Height without pre-stressing
H_A : Delivery height
H_F : Height with nominal load

SD



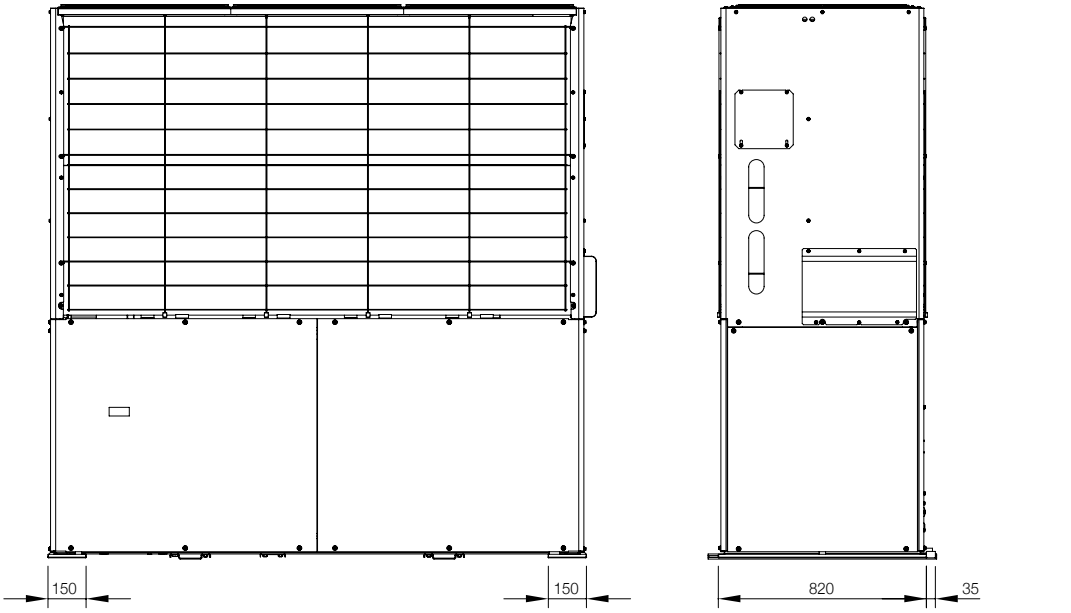
SDS



CONDENSATE TRAYS

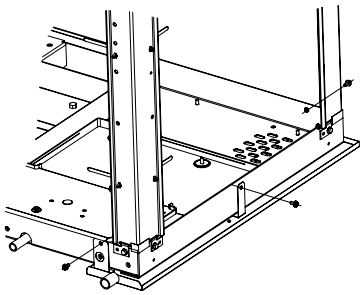
RGA850H1

The drain trays collect the drain formed in defrost mode so that it can be removed in a controlled manner.

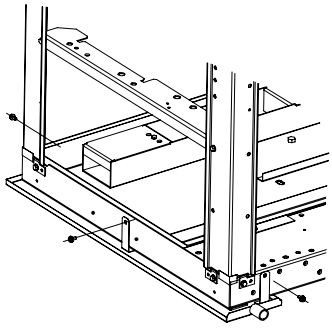


(Connection: Ø 25)

Assembly drawing



(Outdoor unit, left side)



(Outdoor unit, right side)

Part no.	Name	Material	Quantity
1	Tray (left)	Stainless steel	1
2	Tray (right)	Stainless steel	1

MEASUREMENT PORT KIT

FUE3EWEDCS-CV50

The measuring port kit, consisting of a structure-borne sound absorber, a transition/connection piece and a length element with a measuring port, connects an exhaust pipe system with the gas engine heat pump.

Material: stainless steel sheet rustproof, single-walled, blank.

Measurement port kit consisting of:

Part no.	Name	Description	Quantity
1	Transition piece GEHP on length element	- extension: diameter 58 mm bead to diameter 80 mm - reducing/connection piece for on-site exhaust gas systems (pressure class H1)	1
2	Mechanical attachment for transition piece	- structure-borne sound absorber for diameter 60 mm	1
3	Length element 500 mm with measuring port	- with beaded socket - wall thickness 0.6 mm - diameter 80 mm - measuring port in the middle, bore diameter 13 mm with plug	1

Hints:
Observe the manufacturer's specifications regarding the mechanical load-bearing capacity of the exhaust pipe port on the gas engine heat pump. When extending the exhaust system beyond the length element, please consider the additional condensate drain.

A exhaust gas routing near buildings must always be coordinated with the chimney sweep.

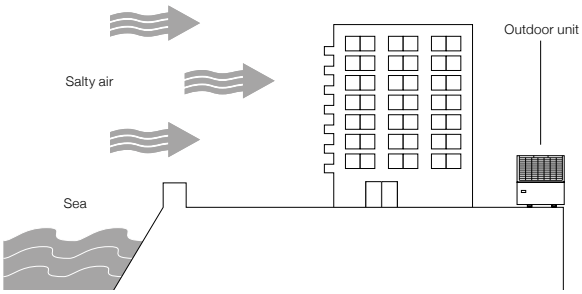
ANTI-CORROSION COATING

TREATMENT

The optimal anti-corrosion treatment enables the installation of the gas engine heat pumps in areas with salty air. It is available in two protection levels: the level is determined by whether the device is in a saline atmosphere (Level 1) or is directly exposed to salty air (Level 2).

Corrosion protection Level 1

The outdoor unit is installed so as to be protected behind a building in proximity to the sea.

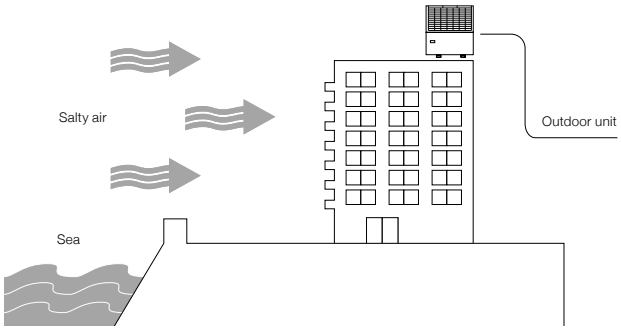


Location characteristics

1. The location is between 300 m and 1,000 m away from the coast.
2. The location is in the lee of a building.
3. The location allows natural cleaning by rain.

Corrosion protection Level 2

The outdoor unit must not be exposed to the direct sea breeze without protection!



Location characteristics

1. The location is less than 300 m away from the coast.
2. The location is not in the lee of a building.
3. Iron cladding and support structures at the location often have to be repainted.
4. The location only rarely allows natural cleaning by rain.

Anti-corrosion coating		Standard	Corrosion protection Level 1	Corrosion protection Level 2
Cover	Surface	Galvanised sheet steel SGCD F08, acrylic baked enamel finish (40–60µ) or polyester powder coating (60–80µ)	As under “standard”	Galvanised sheet steel SGCC F08 + epoxy resin coating (100µ) “silver”
	Rear side			Galvanised sheet steel SGCD F08 + wax-like coating (150µ) “black”
Side parts	Surface	Galvanised sheet steel SGCD F08, acrylic baked enamel finish (40–60µ) or polyester powder coating (60–80µ)	As under “standard”	Galvanised sheet steel SGCC F08 + epoxy resin coating (100µ) “silver”
	Rear side			Galvanised sheet steel SGCC F08 + wax-like coating (150µ) “black”
Base	Surface	Galvanised sheet steel SGHC Z18 without coating	As under “standard”	Galvanised sheet steel SGHC Z18 + wax-like coating (150µ)
	Side and rear side		Galvanised sheet steel SGHC Z18 + epoxy resin coating (40µ)	Galvanised sheet steel SGHC Z18 + wax-like coating (40µ)
Centre cladding	Surface	Galvanised sheet steel SGHC Z18 without coating	Galvanised sheet steel SGHC Z18 + wax-like or acrylic resin coating	Galvanised sheet steel SGHC Z18 + wax-like coating (150µ)
	Side		Galvanised sheet steel SGHC Z18 + epoxy resin coating (40µ)	Galvanised sheet steel SGHC Z18 + wax-like coating (40µ)
	Rear side		As under “standard”	As under “standard”
Frame and framework	Upper part	Galvanised sheet steel SGHC Z18 without coating	Galvanised sheet steel SGHC Z18 + wax-like or acrylic resin coating	Galvanised sheet steel SGHC Z18 + wax-like coating (150µ)
	Lower part		Galvanised sheet steel SGHC Z18 + epoxy resin coating (40µ), inside parts as under “standard”	Galvanised sheet steel SGHC Z18 + epoxy resin coating (40µ)
Struts and air duct		Galvanised sheet steel SGHC Z18 / SGCC Z18 without coating	Galvanised sheet steel SGHC Z18 + wax-like or acrylic resin coating	Galvanised sheet steel SGHC Z18 + wax-like coating (150µ)
Heat exchanger		Without coating	PVC coating (7µ)	PVC coating (7µ)
Bolts, screws and washers of the cladding		Stainless steel	Stainless steel with protective coat	Stainless steel with protective coat
Fan guard		Low-carbon steel wire with polyethylene coating	As under “standard”	Low-carbon steel wire with Polyethylene and epoxy resin coating

ACCESSORIES

COLD WATER INDOOR UNITS

ROUNDFLOW CEILING MOUNTED CASSETTE	**FWC-BT / BF** Cooling: 4.1–8.7 kW / Heating: 5.5–12.1 kW (2-pipe) Cooling: 4.0–8.7 kW / Heating: 5.5–11.0 kW (4-pipe)	**PAGE 90**
EURORASTER CEILING MOUNTED CASSETTE 4-WAY BLOW	**FWF-BT / BF** Cooling: 1.5–5.2 kW / Heating: 2.3–6.7 kW (2-pipe) Cooling: 1.4–4.5 kW / Heating: 2.3–6.1 kW (4-pipe)	**PAGE 91**
CONCEALED CEILING UNIT	**FWS-AAT / AAF** Cooling: 0.6–10.1 kW / Heating: 0.7–11.2 kW (2-pipe) Cooling: 0.6–10.1 kW / Heating: 0.8–10.1 kW (4-pipe)	**PAGE 92**
AIR CURTAIN	**HX GREEN LINE** Heating: 6.0–23.0 kW	**PAGE 93**

ROUNDFLOW CEILING MOUNTED CASSETTE

FWC-BT / BF

- ✓ 360° air discharge
- ✓ Integrated fresh air intake
- ✓ Individual control of the flaps
- ✓ Draughtfree operation

FWC				06BT	07BT	08BT	09BT	06BF	07BF	08BF	09BF
				2-pipe [1) 2)]				4-pipe [1) 3)]			
Capacity	Cooling	High	kW	5.5	6.1	7.2	8.1	5.9	6.3	7.2	8.3
		Average	kW	4.7	5.3	5.9	6.8	5.1	5.6	6.2	6.9
		Low	kW	3.9	4.5	4.8	5.4	4.3	4.6	4.8	5.7
	Heating [4)]	High	kW	6.8	7.7	9.2	10.6	6.9	7.8	9.2	10.4
		Average	kW	5.8	6.6	7.6	8.8	6.1	6.7	7.6	8.7
		Low	kW	4.8	5.5	5.8	7.0	5.2	5.5	5.8	6.8
Sensible capacity	Cooling	High	kW	4.2	4.7	5.7	6.5	4.2	4.6	5.4	6.4
		Average	kW	3.5	4.0	4.5	5.3	3.6	4.0	4.5	5.2
		Low	kW	2.8	3.3	3.5	4.1	3.1	3.3	3.5	4.0
Power input	Cooling	Max.	kW	0.045	0.054	0.077	0.107	0.046	0.055	0.077	0.107
	Heating	Max.	kW	0.045	0.054	0.077	0.107	0.046	0.055	0.077	0.107
Dimensions	L x W x H		mm	288 x 840 x 840				288 x 840 x 840			
Weight			kg	26				29			
Air flow rate		High	m³/h	1,068	1,236	1,518	1,776	1,032	1200	1,476	1,746
		Low	m³/h	720	834	888	1,044	708	804	852	1,014
Water-side pressure loss	Cooling		kPa	15	18	24	30	15	18	23	30
	Heating		kPa	17	22	29	37	18	22	30	38
Sound pressure level		H / L	dB(A)	29 / 24	33 / 28	39 / 32	43 / 37	29 / 24	33 / 28	39 / 32	43 / 37
Power supply			V / Ph / Hz	230 / 1 / 50							
Piping connections	Drain		mm	VP25 (outside diameter 32, outside diameter 25)							
	Water		Inch	3 / 4							
Device panel white (grey slats / white slats)	Model			BYCQ140C / BYCQ140CW							
	Colour			Grey / white (RAL 9010)							
	L x W x H		mm	50 x 950 x 950							
	Weight		kg	5.5							

1) Cooling: Indoor temperature 27 °C DB, 19 °C WB; inlet water 7 °C; outlet water 12 °C.
2) Heating: 2-pipe: Indoor temperature 20 °C DB, 15 °C WB; inlet water 45 °C; outlet water 40 °C.
3) Heating: 4-pipe: Indoor temperature 20 °C DB, 15 °C WB; inlet water 65 °C; outlet water 55 °C.
4) Ingress of water below 5 °C or above 50 °C / 70 °C could damage the device.

EURORASTER CEILING MOUNTED CASSETTE 4-WAY BLOW

FWF-BT / BF

- ✓ Suitable for Euroraster ceiling mounted cassettes
- ✓ Standard drain lifting pump 750 mm
- ✓ Integrated fresh air intake
- ✓ 1 to 2 flaps can be individually closed

FWF				02BT	03BT	04BT	05BT	02BF	03BF	04BF	05BF
				2-pipe [1) 2)]				4-pipe [1) 3)]			
Capacity	Cooling	High	kW	1.7	3.0	4.0	4.9	1,8	2.9	3.8	4.6
		Average	kW	1.5	2.7	3.1	4.0	1.5	2.4	3.1	3.8
		Low	kW	1.3	2.4	2.4	2.8	1.3	1.6	1.6	2.6
	Heating [4)]	High	kW	2.4	3.3	4.5	5.6	3.3	3.6	4.7	5.7
		Average	kW	2.1	2.9	3.5	4.4	2.9	3.1	3.7	4.7
		Low	kW	1.9	2.7	2.7	3.0	2.4	2.6	2.6	3.2
Sensible capacity	Cooling	High	kW	1.4	2.0	2.7	3.5	1.5	1.8	2.5	3.2
		Average	kW	1.2	1.7	2.0	2.7	1.2	1.5	1.9	2.5
		Low	kW	1.0	1.4	1.4	1.8	1.0	1.0	1.0	1.6
Power input	Cooling	Max.	kW	0.074	0.074	0.090	0.118	0.067	0.062	0.074	0.093
	Heating	Max.	kW	0.074	0.074	0.090	0.118	0.067	0.062	0.074	0.093
Dimensions	L x W x H [5)]		mm	285 x 575 x 575				285 x 575 x 575			
Weight			kg	19				20			
Air flow rate		High	m³/h	956	468	660	876	468	438	618	822
		Low	m³/h	300	318	318	420	318	300	300	330
Water-side pressure loss	Cooling		kPa	5	17	29	40	6	16	26	38
	Heating		kPa	7	18	30	43	9	5	9	13
Sound pressure level		High	dB(A)	31	31	40	45	31	33	42	47
Power supply			V / Ph / Hz	230 / 1 / 50							
Piping connections	Drain		mm	VP25 (outside diameter 26, outside diameter 20)							
	Water		Inch	3/4							
Device panel white (RAL 9010)	Model			BYFQ60B							
	L x W x H		mm	55 x 700 x 700							
	Weight		kg	2.7							

1) Cooling: Indoor temperature 27 °C DB, 19 °C WB; inlet water 7 °C; outlet water 12 °C.
2) Heating: 2-pipe: Indoor temperature 20 °C DB, 15 °C WB; inlet water 45 °C; outlet water 40 °C.
3) Heating: 4-pipe: Indoor temperature 20 °C DB, 15 °C WB; inlet water 65 °C; outlet water 55 °C.
4) Ingress of water below 5 °C or above 50 °C / 70 °C could damage the device.
5) Height including switch cabinet.

CONCEALED CEILING UNIT

FWS-AAT / AAF

- ✓ Only the suction and discharge grills visible
- ✓ Energy savings of up to 70 %
- ✓ Automatically adjusts to any room temperature and relative humidity
- ✓ Quiet operation
- ✓ Great flexibility when planning as a result of many device sizes

FWS- ...				02AAT	03AAT	06AAT	08AAT	02AAF	03AAF	06AAF	08AAF
				2-pipe [1) 2)]				4-pipe [1) 3)]			
Capacity	Cooling	Max.	kW	1.94	2.91	4.48	7.93	1.77	2.86	4.64	7.79
		Min.	kW	1.35	1.75	2.99	4.10	1.25	1.72	3.10	4.06
	Heating	Max.	kW	2.15	2.94	4.88	8.37	1.76	2.68	4.64	7.35
		Min.	kW	1.81	2.37	4.11	6.53	1.56	2.31	4.07	6.29
Sensible capacity	Cooling	Max.	kW	1.49	2.09	3.62	5.87	1.44	2.06	3.54	5.76
		Min.	kW	1.04	1.25	2.31	3.04	0.97	1.23	2.27	3.01
Power input		Max.	W	19	16	33	87	19	16	33	87
		Min.	W	10	10	10	13	10	10	10	13
Dimensions		Height	mm	535							
		Width	mm	584	574	1,000	1,214	584	794	1,000	1,214
		Depth	mm	224			249	224			249
Weight			kg	16.9	22.1	26.6	35.4	16.9	22.1	26.6	35.4
Heat exchanger	Water volume		l	1	1	1	1.43	1	1	1	1.43
Additional heat exchanger	Water volume		l	-	-	-	-	0	0	0	0.53
Fan	Type			Radial engine							
	Quantity		Unit	1	2	2	2	1	2	2	2
	Air flow rate	Max.	m³/h	334	442	785	1,393	327	431	763	1,362
		Min.	m³/h	211	241	470	642	205	237	460	636
Sound power level [4)]		Max.	dB(A)	50	48	56	67	50	47	58	66
Water flow rate	Cooling		l / h	454	853	1,084	1,728	454	853	1084	1728
	Heating		l / h	454	853	1,084	1,728	216	367	565	882
Water-side pressure loss	Cooling		kPa	12	11	14	20	13	11	14	16
	Heating		kPa	12	11	14	18	6	4	8	29
Power supply			V / Ph / Hz	230 / 1 / 50							
Piping connections	Drain	AD	mm	16							
	Water		Inch	1/2			3/4	1/2			3/4

1) Cooling: Indoor temperature 27 °C DB, 19 °C WB; inlet water 7 °C; water temperature rise 5 K.
2) Heating: 2-pipe: Indoor temperature 20 °C DB, 15 °C WB; inlet water 45 °C; water temperature rise 5 K.
3) Heating: 4-pipe: air 20 °C DB, 15 °C WB; inlet water 65 °C; water temperature rise 10 K.
4) Sound power level according to ISO3741.

AIR CURTAIN

HX2 ENERGY SAVING LINE

The air curtain HX2 can be used flexibly for different areas of application in wholesale and retail as well as in industry. The devices can be installed free hanging, integrated into the ceiling or as cassettes and are available in different sizes and for different water temperatures.

The newly developed air outlet principle ensures that the stream of air is particularly homogenous with optimal depth effect – the door is reliably and effectively shielded.

Included in the scope of delivery:

- ✓ Ecopower circuit board V9
- ✓ 3 way valve
- ✓ Control cable 6.00 m

Optional accessories:

- ✓ RAL colours available on request
- ✓ Modbus interface card incl. Ecobus software
- ✓ Door contact switch
- ✓ Outside temperature sensor

Free-hanging HX2 ...		1000W4		1500W4		2000W4		2500W4	
Size		S / M / L		S / M / L		S / M / L		S / M / L	
Water temperature	°C	45 / 35	60 / 40	45 / 35	60 / 40	45 / 35	60 / 40	45 / 35	60 / 40
Heating capacity [1]	kW	41 / 4.4 / 5.2	6.1 / 6.5 / 7.6	6.9 / 7.3 / 8.3	10.2 / 10.8 / 12.3	9.6 / 10.2 / 12.2	14.2 / 15.1 / 18.0	12.4 / 13.6 / 15.6	18.3 / 20.1 / 23.0
Operating current	A	1 / 1.4 / 2.5		1.4 / 1.9 / 3.4		1.9 / 2.9 / 5		2.4 / 3.4 / 5.9	
Power supply	V / Ph / Hz	230 / 1 / 50							
Max. air flow rate	m^3/h	1,285 / 1,412 / 1,877		1,927 / 2,131 / 2,633		2,570 / 2,824 / 3,754		3,213 / 3,729 / 4,608	
Weight free-hanging	kg	33 / 37 / 35		49 / 53 / 50		64 / 72 / 67		81 / 89 / 84	
Weight of ceiling suspended unit	kg	32 / 36 / 33		48 / 52 / 49		62 / 70 / 65		79 / 87 / 81	
Weight of cassette	kg	36 / 40 / 38		54 / 58 / 55		70 / 78 / 73		89 / 97 / 91	
Dimensions (L x W x H) free-hanging	mm	1,000 x 622 x 240		1,500 x 622 x 240		2,000 x 622 x 240		2,500 x 622 x 240	
Dimensions (L x W x H) ceiling suspended unit	mm	1,000 x 465 x 270		1,500 x 465 x 270		2,000 x 465 x 270		2,500 x 465 x 270	
Dimensions (L x W x H) cassette	mm	1,000 x 693 x 270		1,500 x 693 x 270		2,000 x 693 x 270		2,500 x 693 x 270	
Noise level in 3.0 m	dB(A)	50 / 50 / 54		52 / 52 / 53		53 / 53 / 57		54 / 56 / 57	

1) Room temperature +20 °C.

SOFTWARE - TOOLS

CHECKER-TOOL / DESIGN-TOOL / MERIT-SOFTWARE

CHECKER-TOOL
Software updates can be installed onto the gas engine heat pump or gas driven refrigerator using the Checker-Tool. The program also enables the system to be analysed (only for trained specialist partners).

DESIGN-TOOL
VRF systems from YANMAR can be designed with the Design-Tool. The software delivers detailed wiring diagrams and material lists.

MERIT-SOFTWARE
The Merit software enables energy cost estimates and economic feasibility calculations.

ONLINE TROUBLESHOOTING
Registered specialist partners have the option of receiving detailed information about error messages via the website.

YANMAR CITY
Future-oriented cooling, air-conditioning and heating solutions for various applications are shown in the virtual YANMAR City.

www.yanmar-city.eu

CHECKLIST

FOR YOUR NEXT PROJECT

Customer/property data

Customer _____ Project title _____

Town/city _____ Period of execution _____

Gas price _____ €/kWh Electricity price _____ €/kWh

Building data

☐ New building ☐ Renovation ☐ Extension

☐ Commercial area ☐ Mixed area ☐ Residential area

☐ Shop ☐ Office/administration ☐ Hotel ☐ Warehouse / logistics

☐ Data processing centre ☐ Trade/industry ☐ Residential construction ☐ Miscellaneous

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Year of construction _____ Surface to be heated _____ m² Surface to be cooled _____ m²

Heating capacity _____ kW Cooling capacity _____ kW Floor height _____ m

AHU system ☐ yes ☐ no Air flow rate _____ m³/h Heating / cooling capacity _____ / _____ kW

Domestic hot water ☐ centralised ☐ decentralised Capacity _____ kW

System and design data

Number of heating/cooling circuits _____ / _____ units

Temperatures of heating/cooling circuits _____ / _____ °C

Which heating and cooling surfaces are used? _____

Bivalent ☐ yes ☐ no _____ System Dew point control ☐ yes ☐ no

Design temperature heating (OT) _____ °C Cooling (OT) _____ °C

Gas engine heat pump system

☐ Air-to-water system ☐ 2-pipe ☐ Yanmar controlled

☐ Air-to-air system (AHU) ☐ 3-pipe ☐ BCS

Installation location

☐ Outside ☐ Roof ☐ Ground level

Distance of GHP from building _____ m

Distance of GHP from neighbouring building _____ m

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Last updated: June 2021 | Subject to change and errors. Please use the corresponding manuals for design and planning.
The General Terms and Conditions of Sale and Delivery can be found at www.energysystem-yanmar.com.