Outline principle

VVM 320 docked with heat pump, additional heat and accessory (liquid condensation)

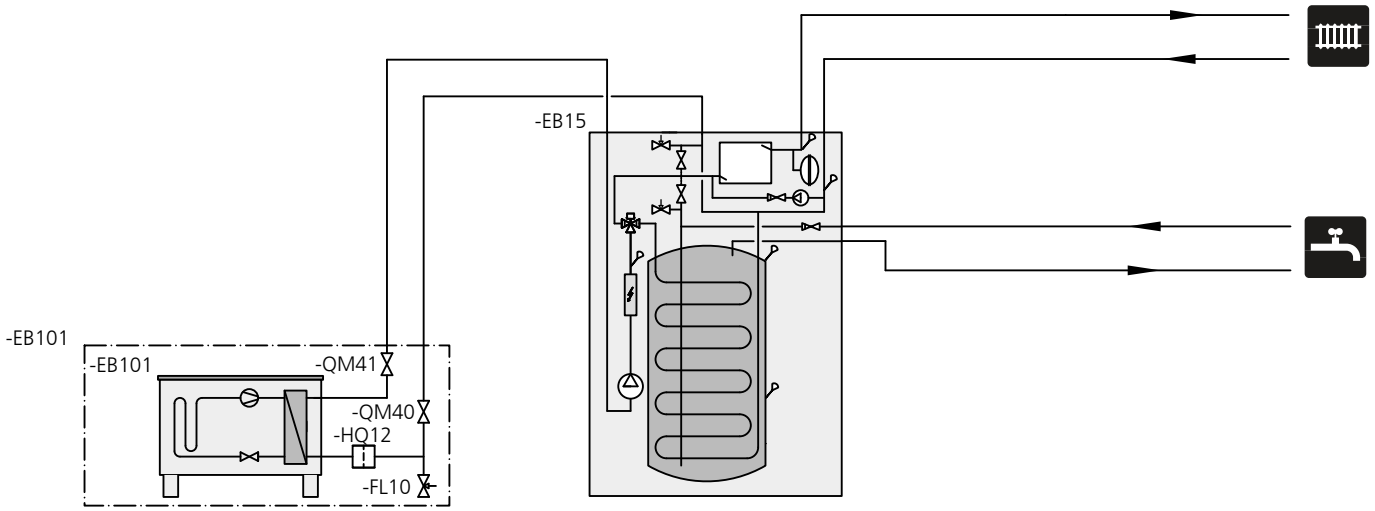
Application

Houses with water-borne heating systems.
Maximal recommended heating output
13.5 kW.

Alternative

- ☐ Two climate systems
- ☐ Electric heater, backup
- ☐ HWC with addition
- ☐ Pool
- ☐ Active cooling 4-pipe

Reset alternative



NOTE! This is an outline diagram. Actual installation must be project planned according to applicable norms.

NOTE! NIBE does not supply all components in this outline diagram.

See the appropriate "Installer manual"/"Installation and Maintenance Instructions" for more information.

Designations according to standard IEC 81346-1 and 81346-2.

Function

Operate modes

Heat production

The heating control system on VVM 320 is controlled by the outdoor temperature. This means that the supply of heat to the house is regulated in accordance with the chosen setting of the regulating curve (curve slope and offset). After adjustment, the correct amount of heat for the outdoor temperature is supplied. The supply temperature of VVM 320 will hover around the required value. For subnormal temperatures the control system calculates a heating deficit in the form of "degree minutes", which means that heating production is accelerated. The larger the subnormal temperature, the greater the heat production. The internal immersion heater is connected automatically when the energy requirement exceeds the heat pump's capacity.

Hot water production

When there is a demand for hot water, VVM 320 gives this priority and devotes entire heat pump output to water heating. No room heat is produced in this mode. Maximum time for hot water charging can be adjusted in the menu system. Hot water charging starts when the hot water sensor has fallen to the set start temperature. Hot water charging stops when the hot water temperature on the hot water sensor (BT6) has been reached. For occasional higher demand for hot water, the "temporary lux" function can be used to raise the temperature for 3 – 12 hours (selected in the menu system). Periodic hot water increase is factory set to every 14 days.

Cooling production

If a heat pump with cooling function is connected to VVM 320, active cooling can be produced on two different levels.

In the lower section of VVM 320 high temperature cooling down to a min temperature of +18°C can be produced.

By connecting the accessory ACS 310 supply temperatures down to +7°C can be obtained. A cooling system is connected to the heat pump supply via a reversing valve.

Functions/accessories

Heat pump

F2030 is a heat pump with on/off compressor. The entire compressor output is routed to heating, hot water or any pool heating. If the output is not sufficient, additional heat engages automatically.

F2040/F2120 is a heat pump with inverter compressor. The compressor output is adjusted according to the demand and routed to heating, hot water or any pool heating or cooling. If the heating output is not sufficient, additional heat engages automatically.

AUX inputs

VVM 320 has software controlled inputs for connecting the switch function or sensor. This means that when an external switch function or sensor is connected to one of five AUX connections, the correct function must be selected for the correct connection. For further information see the Installer's manual.

The following functions can be controlled:

- Blocking of additional heat and/or compressor
- Tariff blocking
- Activating temporary lux (extra hot water)
- External adjustment of the supply temperature
- Switch for "SG ready"
- External alarm

All control signals should occur with potential-free relays.

AUX outputs

It is possible to have an external connection through the relay function via a potential-free variable relay (max 2 A) on the input circuit board (AA3), terminal block X7.

Optional functions for external connection:

- Indication of common alarm (preselected at the factory).
- Cooling mode indication (only applies if cooling accessories are available).
- Control of circulation pump for hot water circulation.
- External circulation pump (for heating medium).
- Electric heater, backup

If any of the above is installed to terminal block X7 it must be selected in the control system.

The accessory card is required if two or more of the above functions are to be connected to terminal block X5 at the same time.

Room control

VVM 320 can be supplemented with a room sensor (BT50).

The room sensor has up to three functions:

- Show current room temperature in the heat pump's display.
- Option of changing the room temperature in °C.
- Makes it possible to change/stabilise the room temperature.

Install the sensor in a neutral position where the set temperature is required. A suitable place is on a free inner wall in a hall approx. 1.5 m above the floor. It is important that the sensor is not prevented from measuring the correct room temperature by being located, for example, in a recess, between shelves, behind a curtain, above or close to a heat source, in a draft from an external door or in direct sunlight. Closed radiator thermostats can also cause problems.

The heat pump operates without the sensor, but if you want to read off the accommodation's indoor temperature in the VVM 320 display, the sensor must be installed.

Electric heater backup

An electric heater can be activated by the AUX output when the compressor is stopped by a cold outdoor temperature. Maximal recommended power 4.5 kW.

Extra climate system

This function requires accessory ECS 40/ECS 41. A shunt valve, supply and return line sensor and a circulation pump are connected to a second heating circuit with a lower temperature demand (e.g. under floor heating system). The temperature in the extra climate system is controlled by the heat pump and the shunt valve by offsetting the heating curve (each climate system has its own heating curve), room sensor or room unit. Up to 3 extra climate systems can be connected to VVM 320.

Pool

This function requires accessory POOL 310. A reversing valve and a circulation pump can be connected to control all of the charge flow from the heat pump to a pool exchanger.

The reversing valve is installed on the charging circuit after the heat pump. During pool heating the heating medium is circulated between the heat pump and the pool exchanger using circulation pump GP14.

Active cooling (4-pipe)

This function requires accessory ACS 310 and heat pump with cooling function. The cooling system is connected to the heat pump charge circuit via a reversing valve and a circulation pump is connected to control all of the charge flow from the heat pump to the cooling system.

When cooling is required (activated from the outdoor sensor and any room sensor) the reversing valve and the circulation pump are activated.

The compressor output is adjusted according to the demand and to maintain the set cooling supply temperature.

List of Components

VVM 320 docked with heat pump, additional heat and accessory (liquid condensation)

Pos	Name	Product name	Supplier	Art no.	Remarks
CL11	**Pool system POOL 310**			067 247	
AA25	Accessory card	Included in POOL 310	NIBE		
BT51	Temperature sensor, pool	Included in POOL 310	NIBE		
EP5	Exchanger, pool				
GP9	Circulation pump				
GP12	Circulation pump	Included in POOL 310			
HQ4	Particle filter pool				
QN19	Reversing valve, pool	Included in POOL 310	NIBE	067 247	
RM5	Non-return valve				Only used when connecting solar to pool
EB1	**Electric boiler system**				
EB1	Electric boiler	ELK 15	NIBE	069 022	
EB15	**Indoor module system**				
EB15	Indoor module	VVM 310	NIBE	069 430	
FL2	Safety valve, heating medium				
CM1	Expansion vessel, heating medium				
EB101	**Heat pump system**				
EB101	Heat pump	F2030/F2040/F2120	NIBE		
FL10	Safety valve, heat pump				
HQ1	Particle filter	Included in F20XX	NIBE		
QM1	Drain valve, heating medium				
QM40-41	Shut-off valve				
RN10	Control valve				
EP21	**Climate system 2**				
AA25	Control unit	Included in ECS 40/ECS 41	NIBE	067 287/067 288	
BT2	Temperature sensor, heating medium supply	Included in ECS 40/ECS 41	NIBE	067 287/067 288	
BT3	Temperature sensor, heating medium return	Included in ECS 40/ECS 41	NIBE	067 287/067 288	
GP20	Circulation pump, extra climate system	Included in ECS 40/ECS 41	NIBE	067 287/067 288	
QN25	Shunt valve	Ingår i ECS 40/ECS 41	NIBE	067 287/067 288	
QZ1	**Hot water circulation**				
GP9	Circulation pump				
EQ1	**Active cooling module ACS 310**			067 248	
AA25	Unit box	Included in ACS 310	NIBE		
BT64	Temperature sensor, cooling, supply line	Included in ACS 310	NIBE		
CP10	Single jacket accumulator tank, cooling		NIBE		
	UKV 200	Cooling accumulator	NIBE	080 321	
	UKV 300	Cooling accumulator	NIBE	080 330	
GP12	Charge pump	Included in ACS 310	NIBE		
GP13	Circulation pump, cooling				
QN12	Reversing valve cooling/heating	Included in ACS 310	NIBE		