

Service manual  
**NIBE SPLIT HBS 05**  
SPLIT box



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# 1 Important information

## Document information

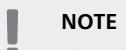
This technical manual is a complement to the Installer handbook for NIBE SPLIT HBS 05, containing:

- Component description.
- Information to facilitate fault-tracing.
- Instructions for replacing components.
- Supplementary technical information.

## Safety information

This technical manual describes service procedures that are intended to be performed by specialists.

### Symbols



#### NOTE

This symbol indicates danger to person or machine .



#### Caution

This symbol indicates important information about what you should observe when maintaining your installation.



#### TIP

This symbol indicates tips on how to facilitate using the product.

## Marking

**CE** The CE mark is obligatory for most products sold in the EU, regardless of where they are made.

- Classification of enclosure of electro-technical equipment.



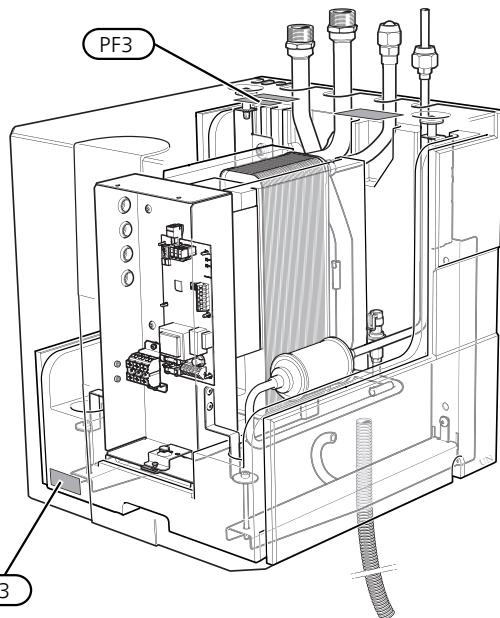
Danger to person or machine.



Read the User Manual.

## Serial number

You can find the serial number (PF3) under the cover, both on the front and on top of NIBE SPLIT HBS 05.

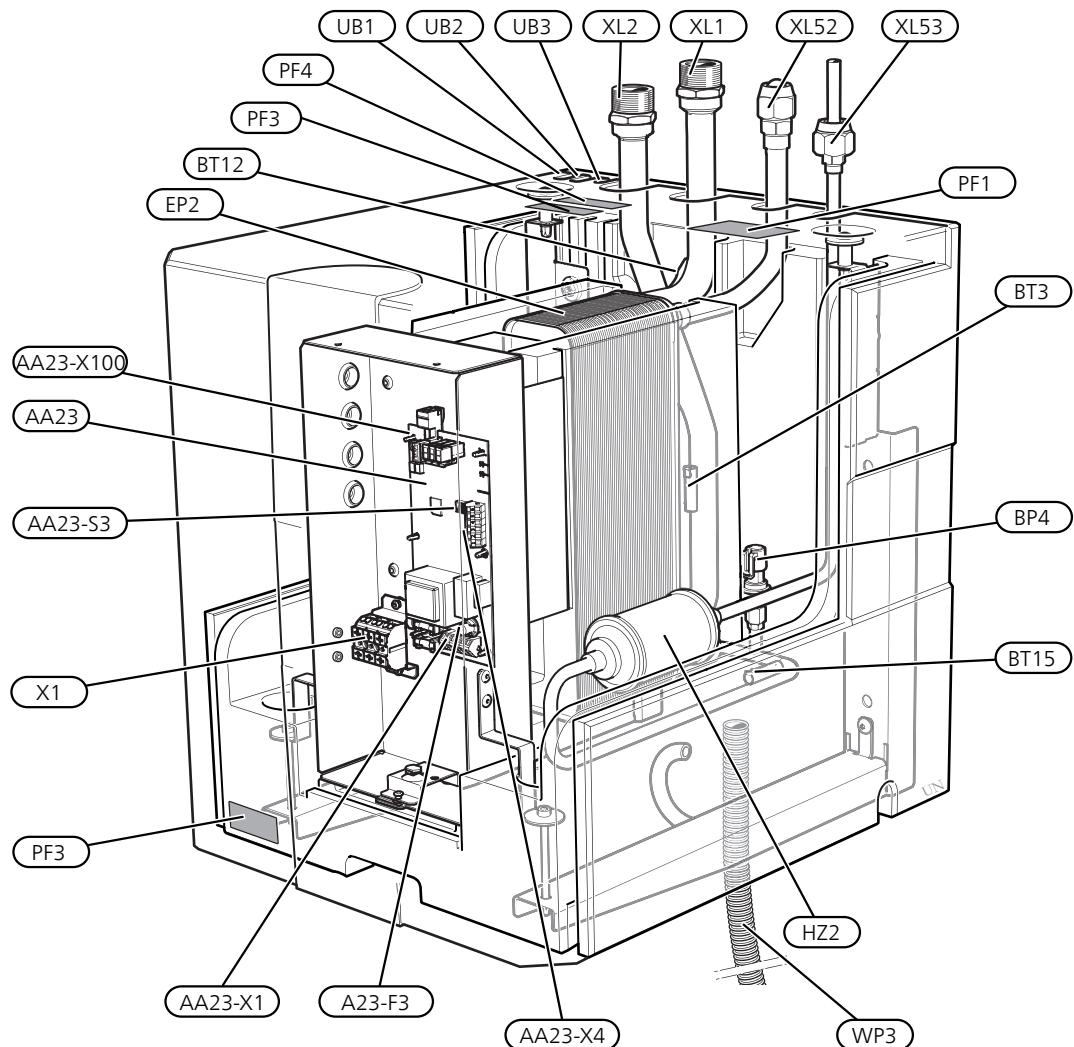


#### Caution

You need the product's (14 digit) serial number for servicing and support.

## 2 The heat pump design

### Component location



## List of components

### Pipe connections

- XL1 Climate system supply
- XL2 Climate system return
- XL52 Connection, gas line
- XL53 Connection, liquid line

### Valves etc.

- EP2 Heat exchanger
- HZ2 Drying filter
- QZ2 Filterball (supplied)

### Sensor, thermostats

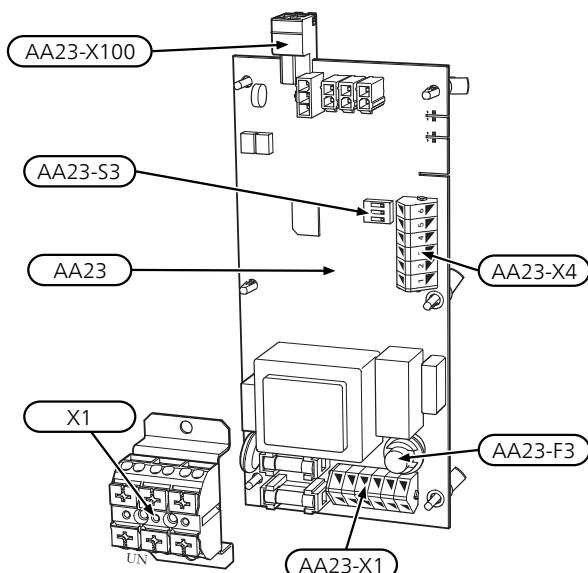
- BP4 Pressure sensor, high pressure
- BT3 Temperature sensor, heating medium, return
- BT12 Temperature sensor, condenser, supply
- BT15 Temperature sensor, fluid pipe

### Miscellaneous

- PF1 Rating plate
- PF3 Serial number plate
- PF4 Sign, pipe connections
- UB1 Cable gland
- UB2 Cable gland
- UB3 Cable gland
- WP3 Condensation hose

## Electrical panel

### NIBE SPLIT HBS 05



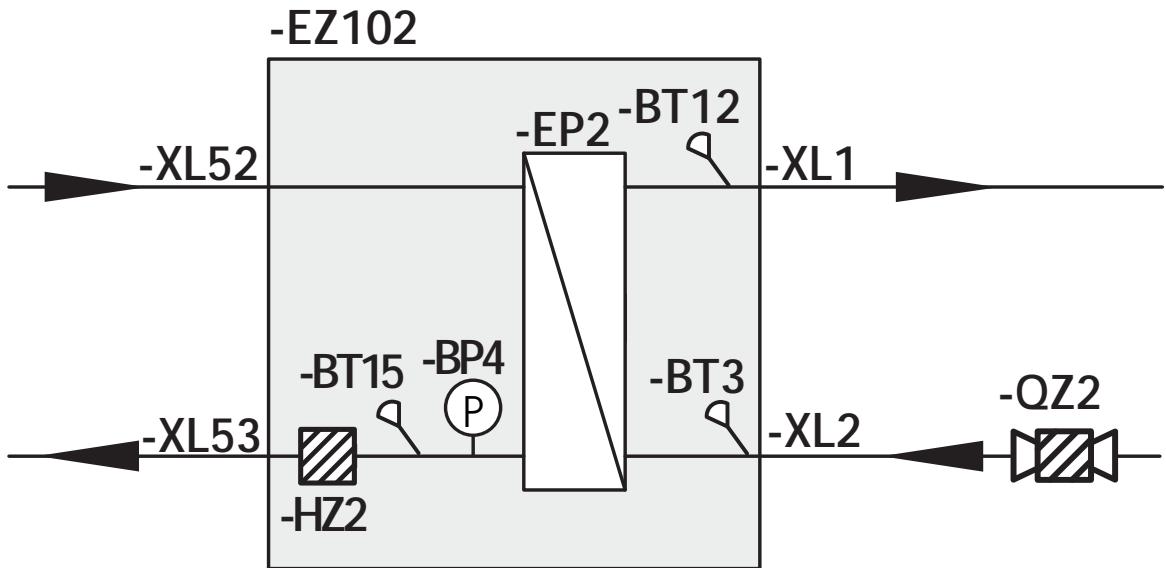
### Electrical components NIBE SPLIT HBS 05

- |           |   |
|-----------|---|
| AA23      | Communication board   |
| AA23-F3   | Fuse for external heating cable                                   |
| AA23-S3   | DIP switch, addressing of outdoor unit                            |
| AA23-X1   | Terminal block, incoming supply, connection of KVR                |
| AA23-X4   | Terminal block, communication with indoor module / control module |
| AA23-X100 | Terminal block, communication outdoor module AMS 10               |
| X1        | Terminal block, incoming supply                                   |

Designations in component locations according to standard IEC 81346-1 and 81346-2.

# 3 System description

## Principle of operation



Components

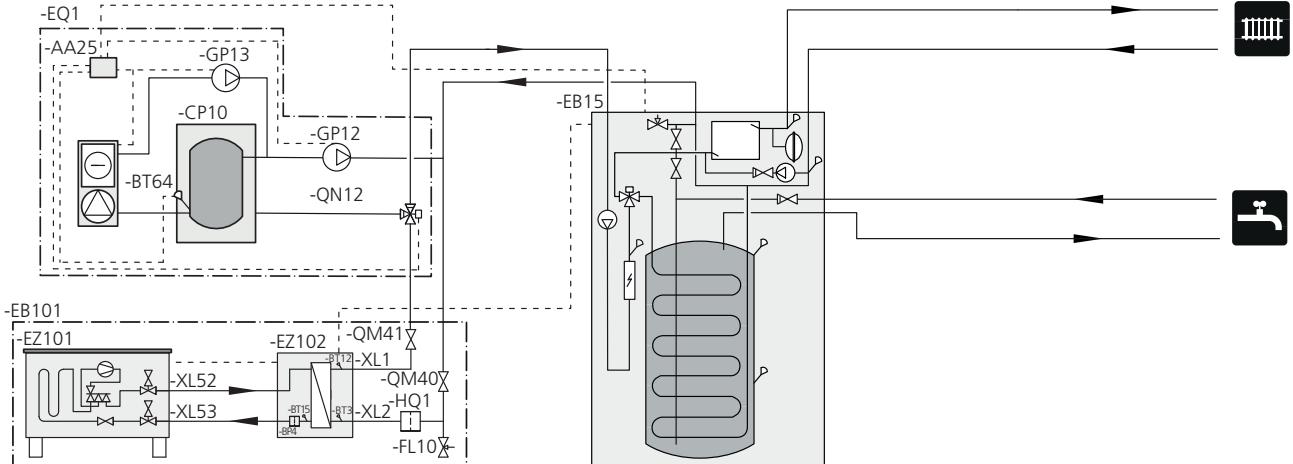
Designation	Information
BT3	Temperature sensor, return
BT12	Temperature sensor, condenser supply line
BT15	Temperature sensor, fluid pipe
BP4	Pressure sensor, high pressure
HZ2	Drying filter
QZ2	Filterball
EP2	Heat exchanger
XL1	Connection, heating medium flow
XL2	Connection, heating medium return
XL52	Connection, gas line
XL53	Connection, liquid line

Sensor internal

Designation	Name	Location	Function
BP4	Pressure sensor	On the liquid line after the condenser	Stopping the compressor at high pressure
BT3	Return line sensor	On the return line at the condenser	Stopping the compressor at high temp.
BT12	Flow line sensor	On the supply line at the condenser	Stopping the compressor at high temp.
BT15	Fluid line sensor	On the liquid line after the condenser	View

## System diagram

### AMS 10 docked with NIBE SPLIT HBS 05 and VVM 320 (floating condensation)



#### NOTE

- This is an outline diagram. Actual installations must be planned according to applicable standards.
- Several system principles available at [www.nibe.se/docking](http://www.nibe.se/docking).
- Refer to the Installer manual for description of possible docking alternatives.

### Explanation

<b>EB15</b>	<b>Indoor module (VVM 320)</b>
<b>EB101</b>	NIBE SPLIT HBS 05
BP4	Pressure sensor, condenser
BT3	Temperature sensor, heating medium, return
BT12	Temperature sensor, condenser, supply
BT15	Temperature sensor, fluid pipe
EZ101	Outdoor module (AMS 10)
EZ102	SPLIT box (NIBE SPLIT HBS 05)
FL10	Safety valve, heat pump
HQ1	Particle filter
QM40	Shut-off valve
QM41	Shut-off valve
XL1	Connection, heating medium, flow 1
XL2	Connection, heating medium, return 1
XL52	Connection, gas line
XL53	Connection, liquid line

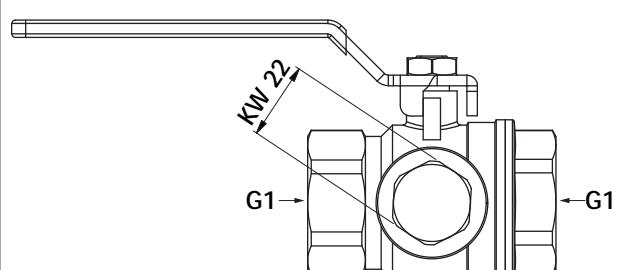
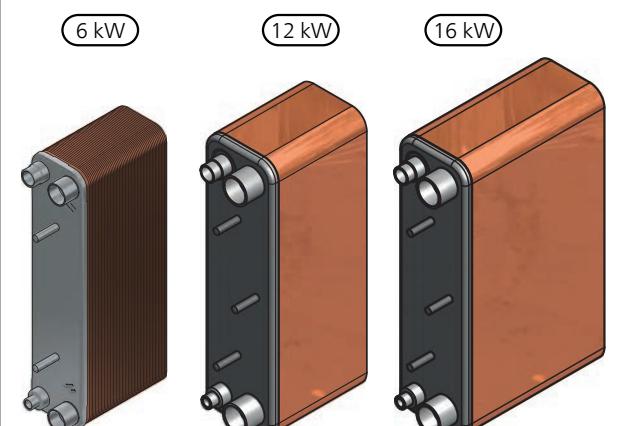
### **Installation requirements**

SPLIT box NIBE SPLIT HBS 05	NIBE SPLIT HBS 05-6	NIBE SPLIT HBS 05-8	NIBE SPLIT HBS 05-12	NIBE SPLIT HBS 05-16
Compatible outdoor module	AMS 10-6	AMS 10-8	AMS 10-12	AMS 10-16
Max pressure, climate system		0.25 MPa (2.5 Bar)		
Highest recommended supply/return temperature at dimensioned outdoor temperature		55/45 °C		
Max flow line temperature with compressor		58 °C		
Min supply temperature cooling, NIBE SPLIT HBS 05		7 °C		
Max supply temp. cooling		25 °C		
Min volume, climate system during heating, cooling*	20 l	50 l	80 l	150 l
Min volume, climate system during under floor cooling*	50 l	80 l	100 l	150 l
Max flow, climate system	0.29 l/s	0.38 l/s	0.57 l/s	0.79 l/s
Min flow, climate system, 100 % circulation pump speed (defrosting flow)	0.19 l/s	0.19 l/s	0.29 l/s	0.39 l/s
Min flow, heating system	0.09 l/s	0.12 l/s	0.15 l/s	0.24 l/s
Min flow, cooling system	0.11 l/s	0.16 l/s	0.20 l/s	0.32 l/s

\*Refers to circulating volume.

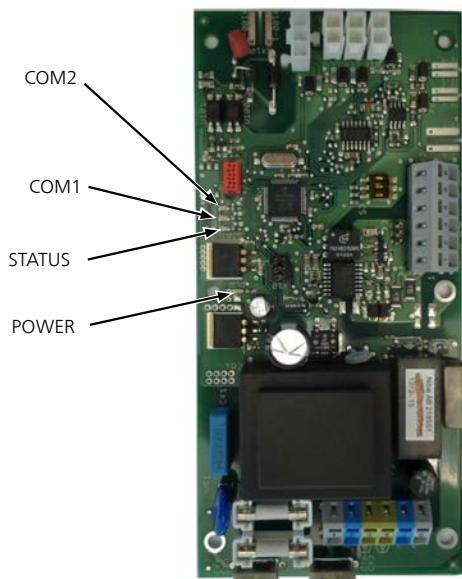
# 4 Component description

## Components

Component	Description
Pressure sensor (BP4)	Working range: 1-46 bar Connection: 7/16"
Filterball (QZ2)	
Drying filter (HZ2)	Working range: 1-42 bar Solder connection: 3/8"
Heat exchanger (EP2)	

## Circuit board

### Communication board (AA23)



LED	Status
Status	Flashes=OK
Power	Lit=12V OK
COM1	Flashes=All OK to indoor unit
COM2	Flashes=All OK to outdoor unit

## Sensors

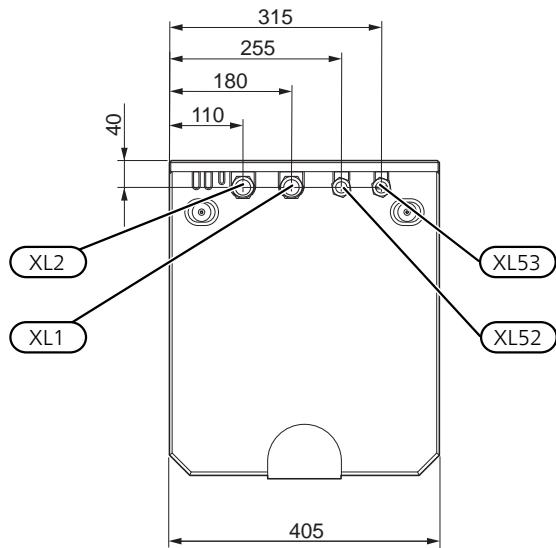
**Data for temperature sensor return line (BT3), condenser supply (BT12) as well as fluid pipe (BT15)**

Temperature (°C)	Resistance (kOhm)	Voltage (VDC)
-40	351.0	3.256
-35	251.6	3.240
-30	182.5	3.218
-25	133.8	3.189
-20	99.22	3.150
-15	74.32	3.105
-10	56.20	3.047
-5	42.89	2.976
0	33.02	2.889
5	25.61	2.789
10	20.02	2.673
15	15.77	2.541
20	12.51	2.399
25	10.00	2.245
30	8.045	2.083
35	6.514	1.916
40	5.306	1.752
45	4.348	1.587
50	3.583	1.426
55	2.968	1.278
60	2.467	1.136
65	2.068	1.007
70	1.739	0.891
75	1.469	0.785
80	1.246	0.691
85	1.061	0.607
90	0.908	0.533
95	0.779	0.469
100	0.672	0.414

# 5 Technical data

## Dimensions

### SPLIT box NIBE SPLIT HBS 05



View from above.

XL1 Climate system, flow Ø 28 mm

XL2 Climate system, return Ø 28 mm

XL52 Gas line refrigerant, NIBE SPLIT HBS 05-12/16: flare 5/8". NIBE SPLIT HBS 05-6: 1/2"

XL53 Liquid line refrigerant, NIBE SPLIT HBS 05-12/16: flare 3/8". NIBE SPLIT HBS 05-6: 1/4"

## Technical specifications



### NIBE SPLIT HBS 05 (AMS 10 and NIBE SPLIT HBS 05)

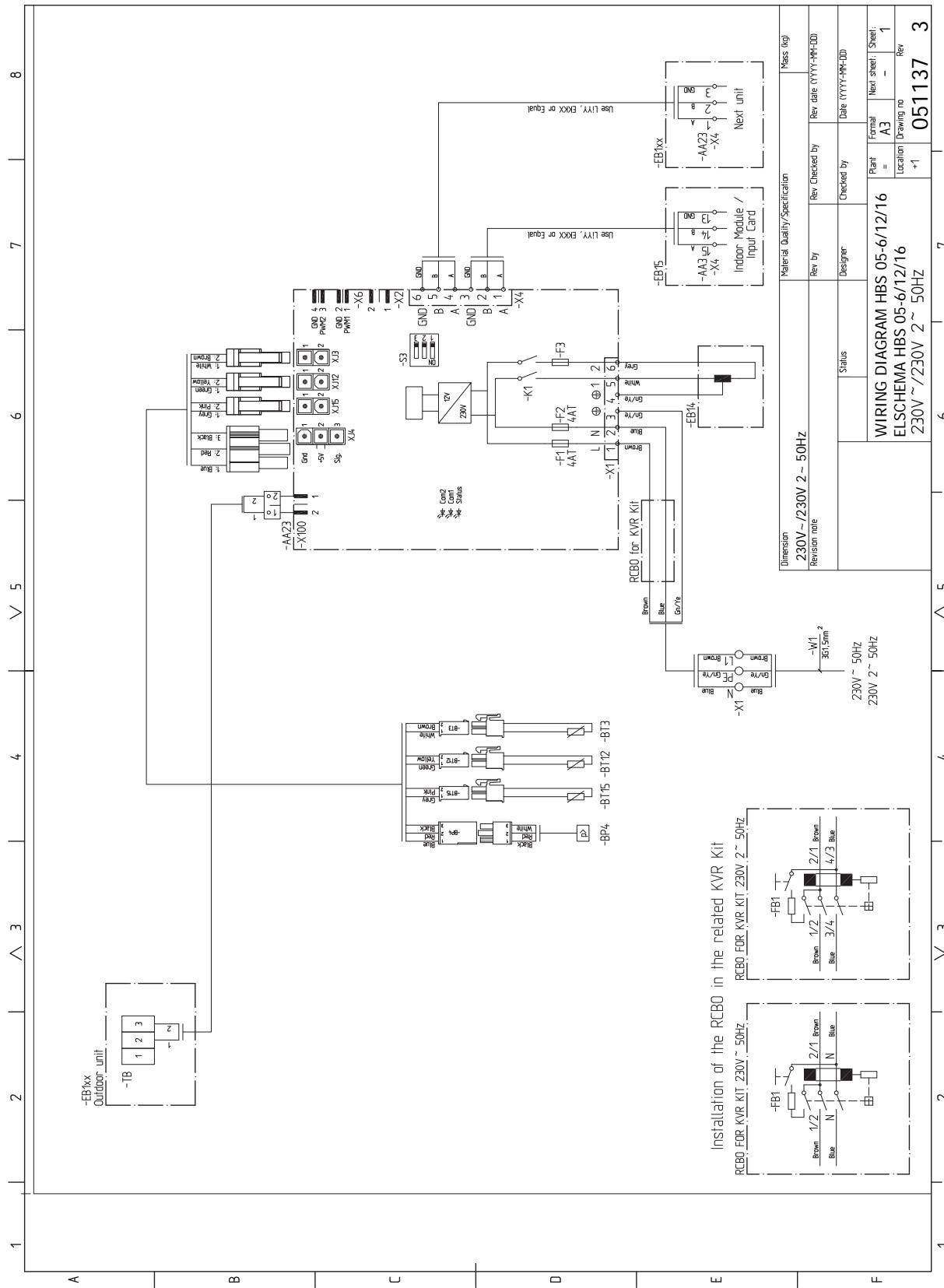
NIBE SPLIT HBS 05 (AMS 10 and NIBE SPLIT HBS 05)		
Working range during heating with compressor (ambient temperature)	°C	-20 – +43
Working range during cooling (ambient temperature)	°C	+15 – +43
Max temperature flow line, only compressor	°C	58
Max temperature return line	°C	55
Min temperature flow line during heating with compressor and continuous operation	°C	25
Maximum temperature supply during cooling and continuous operation	°C	25
Min temperature flow line during cooling	°C	7
Incoming voltage supply, maximum permitted deviation	%	-15 % – +10 %
The water quality, domestic hot water and climate system		≤ EU directive no. 98/83/EF

### NIBE SPLIT HBS 05

SPLIT box		HBS 05-6	HBS 05-12		HBS 05-16		
Compatible outdoor module		AMS 10-6	AMS 10-8	AMS 10-12	AMS 10-16		
<i>Electrical data</i>							
Electrical connections		230V ~50Hz					
Recommended fuse rating	A <sub>rms</sub>	6					
<i>Heating medium</i>							
Max pressure, climate system	MPa (bar)	0.6 (6)					
Max pressure, cooling system	MPa	4.5					
Min/max system flow, heating operation	l/s	0.09 / 0.29	0.12 / 0.38	0.15 / 0.57	0.25 / 0.79		
Min/max system flow, cooling operation	l/s	0.11 / 0.29	0.15 / 0.38	0.20 / 0.57	0.32 / 0.79		
Min flow, climate system, 100 % circulation pump speed (defrosting flow)	l/s	0.19	0.19	0.29	0.39		
Volume, total	litre	1.2 ±5%	3 l ±5 %		4 l ±5 %		
Max operating temperature	°C	65					
Ambient temperature	°C	5 – 35 °C, max relative humidity 95 %					
<i>Dimensions and weight</i>							
Width	mm	404					
Depth	mm	472					
Height, without pipe/with pipe	mm	463 / 565					
Weight	kg	13	15	19.5			
<i>Miscellaneous</i>							
Water quality, climate system		EU directive no. 98/83/EF					
Enclosure class		IP 21					
Part no.	067 578	067 480		067 536			

# Electrical circuit diagram

## NIBE SPLIT HBS 05



Designa-tion	Description
20S	Solenoid for 4-way valve
52X1	Auxiliary relay (for CH)
52X2	Auxiliary relay (for DH)
52X3	Auxiliary relay (for 20S)
52X4	Auxiliary relay (for SV1)
63H1	High pressure pressostat
C1	Capacitor
CH	Compressor heater
CM	Compressor motor
CnA~Z	Terminal block
CT	Current sensor
DH	Drain pan heater
DM	Diode module
F	Fuse
FM01, FM02	Fan motor
IPM	Intelligent power module
L/L1	Induction coil
LED1	Indication lamp (red)
LED2	Indication lamp (green)
LPT	Low pressure transmitter
QN1 (EEV-H)	Expansion valve for heating
QN3 (EEV-C)	Expansion valve for cooling
SW1, 9	Pumpdown
SW3, 5, 7, 8	Local settings
TB	Terminal block
BT28 (Tho-A)	Temperature sensor, outdoor air
Tho-D	Temperature sensor, hot gas
Tho-R1	Temperature sensor, heat exchanger out
Tho-R2	Temperature sensor, heat exchanger, in
Tho-S	Temperature sensor, suction gas
Tho-P	Temperature sensor, IPM

# 6 Item register

## Item register

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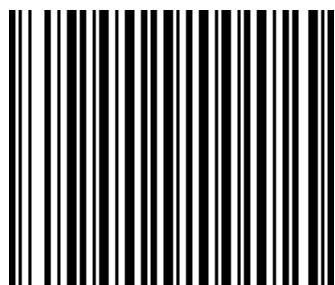
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**NIBE AB Sweden**  
Hannabadvägen 5  
Box 14  
SE-285 21 Markaryd  
[info@nibe.se](mailto:info@nibe.se)  
[www.nibe.eu](http://www.nibe.eu)



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