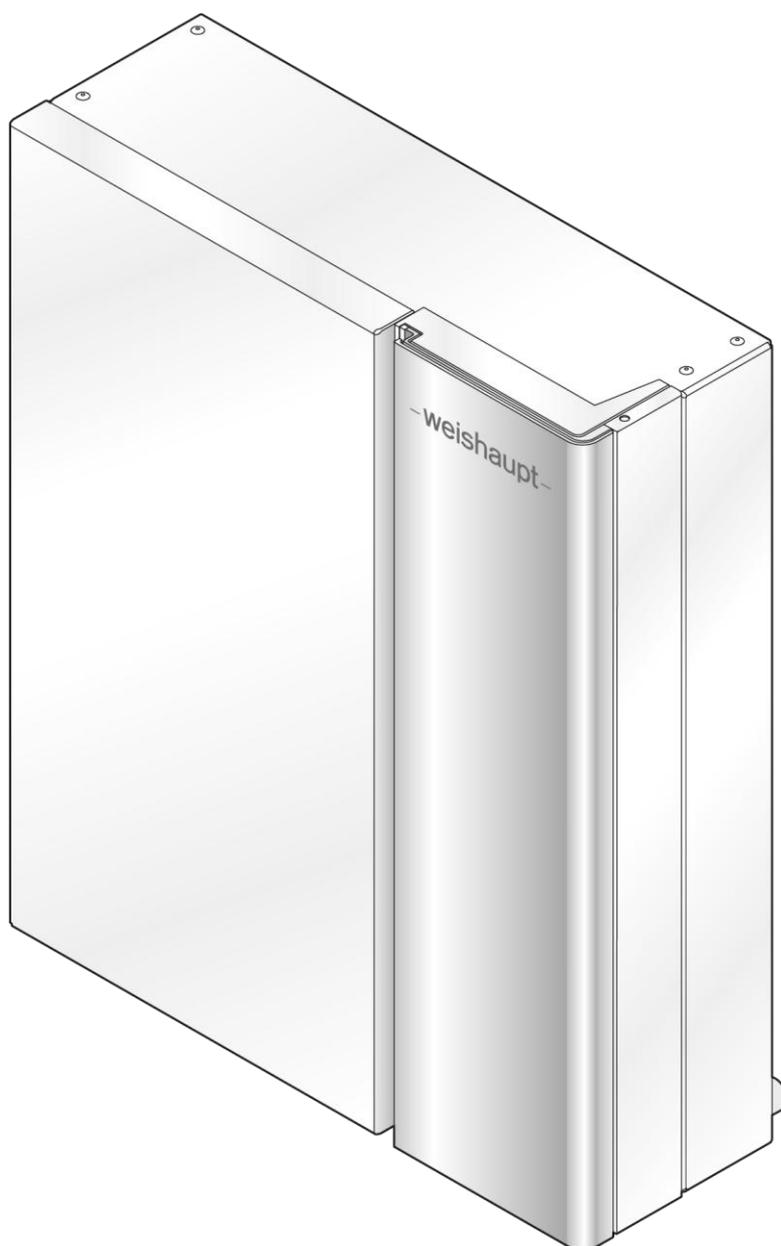


–weishaupt–

manual

Data point list



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1 Data points compatible to the following Weishaupt products

1 Data points compatible to the following Weishaupt products

Air/water heat pump AEROBLOCK (WAB)

Air/water heat pump BIBLOCK (WBB)

Air/water heat pump SPLITBLOCK (WSB)

Brine/water heat pump GEOBLOCK (WGB)

2 General information for remote control of a heat pump

Please note

All parameter changes (except the noted ones) are stored in the EEPROM. There is a write limit of 100,000 write accesses over the service life. It is therefore recommended to write/change parameters as little as possible.

When changing setpoints, please note that the heating system needs a certain amount of time to implement the change. The heating system (underfloor heating or radiators) plays a very important role in changing the flow temperature. Our heat pumps are designed for a maximum temperature spread between flow and return temperatures of 10 Kelvin.

When making changes, please note that there are different operating states that the heat pump executes automatically. This will have effects on other parameters, for example the flow temperature externally written Modbus parameters are ignored under these conditions. It is recommended to check the operating status regularly.

This manual lists all Modbus data points that are available for communication. The hydraulic diagram shows the installed sensors and the corresponding functions.

If data points are not available for your heat pump, it may be necessary to update the controller software. The software is constantly being developed.

3 Data points

3.1 Modbus configuration specifications

System device

Make the following settings in the controller at Settings -> Modbus TCP:

Access:

Set "Access" to "On"

Network:

Configure the network to the same IP network

Network mask:

Set the appropriate network mask

TCP port: 502

Slave address: 1

(all have the same address)

The IP address of the device/controller can be used to distinguish between the master and slave devices

Register: Input 0x04

Length: 5

These must be assigned consecutively. You can read a maximum of 5 data points at once.

Note on Modbus addresses:

Depending on the used BMS Modbus software, the listed addresses must be increased or decreased by one in each case.

3 Data points

3.2 Data points System

Values that can only be read

Data value	Modbus	Format	Data type	Value	Function
Outdoor temperature 1	30 001	Format Sensor	signed short	-32768	No sensor
				-32767	Sensor interruption
				-32766	Sensor short circuit
				-32758	Sensor digital status OFF
				-32757	Sensor digital status ON
				-500 ... 5000	Temperature value -50.0 ... 500.0°C
Outside temperature 2	30 002	Sensor format	signed short	-32768	No sensor
				-32767	Sensor interruption
				-32766	Sensor short circuit
				-32758	Sensor digital status OFF
				-32757	Sensor digital status ON
				-500 ... 5000	Temperature value -50.0 ... 500.0°C
Error	30 003	Format error message	unsigned short	0 ... 65534	N – Error code – Code table from connected device
				65535	No error code active
Warning	30 004	Format error message	unsigned short	0 ... 65534	N – Error code – Code table from connected device
				65535	No error code active
No error	30 005	Format error message	unsigned short	0 ... 65534	N – Error code – Code table from connected device
				65535	No error code active
Operating status display coding	30 006	Format Operating status display	unsigned short	0	Undefined
				1	Relay test
				2	Emergency stop
				3	DIAGNOSTICS
				4	MANUAL OPERATION
				5	MANUAL OPERATION_HEATING
				6	MANUAL OPERATION_COOLING
				7	MANUAL_DEFROSTING_OPERATION
				8	DEFROST
				9	HP2
				10	EVU_BLOCK
				11	SG_TARIFF
				12	SG_MAXIMUM
				13	TARIFF LOAD
				14	INCREASED_OPERATION
				15	STANDBY TIME
				16	STANDBY OPERATION

3 Data points

			17	RINSING OPERATION
			18	FROST PROTECTION
			19	HEATING OPERATION
			20	HOT WATER OPERATION
			21	LEGIONELLA PROTECTION
			22	SWITCHING_HZ_KU
			23	COOLING OPERATION
			24	PASSIVE COOLING
			25	SUMMER OPERATION
			26	SWIMMING POOL
			27	HOLIDAYS
			28	SCREED
			29	CLOSED
			30	LOCK_AT
			31	LOCK_SUMMER
			32	CLOSURE_WINTER
			33	OPERATING LIMIT
			34	HK_LOCK
			35	READINESS
			36	REGENERATIVE
			37	SGR3_HEATING
			38	SGR3_COOLING
			39	SGR3_HOT WATER
			40	SGR4_HEATING
			41	SGR4_COOLING
			42	SGR4_HOT WATER
			43	OIL RETURN
			44 ... 65535	undefined

3 Data points

Values that can be read and written

<u>Data value</u>	<u>Modbus</u>	<u>Format</u>	<u>Data type</u>	<u>Value</u>	<u>Function</u>
System operating mode	40 001	FormatSystem operating mode	unsigned short	0	AUTOMATIC (when cooling is enabled)
				1	HEATING
				2	COOLING (when cooling is enabled)
				3	SUMMER
				4	STANDBY
				5	2nd HP (second heating device, for example electric heating rod)
Setpoint PV	40 002	FormatPV	Unsigned short	0 ... 65535	Current PV energy in watts (0 ... 65.535 kW)

Parameter Setpoint PV is a parameter that is not written to the EEPROM. Therefore, there are no restrictions here.

This parameter can be used to specify a power output in W that the heat pump is allowed to use for heating.

If the value 0 is written, this function is deactivated again and the heat pump regulates again based on the temperatures and specifications.

The response time of the heating system must be taken into account here. If the temperature in heating/hot water mode is lower than the switch-on temperature difference, the parameter is not taken into account.

For more information on the PV setpoint parameter, see chapter: Data point for PV own electricity .

3 Data points

3.3 Heating circuit data points

Values that can only be read

<u>Data value</u>	<u>Modbus</u> Heating cir- cuit 1	<u>Modbus</u> Heating cir- cuit 2	<u>Modbus</u> Heating cir- cuit 3	<u>Modbus</u> Heating cir- cuit 4	<u>Format</u>	<u>Data type</u>	<u>Value</u>	<u>Function</u>
Room set- point tempe- rature	31 101	31 201	31 301	31 401	Format setpoints	signed short	-32768	No setpoint request active
							1	No setpoint request active
							50	Temperature value 5.0 ... 500.0°C
Room temperature	31 102	31 202	31 302	31 402	Sensor format	signed short	-32768	No sensor
							-32767	Sensor interruption
							-32766	Sensor short circuit
							-32758	Sensor digital status OFF
							-32757	Sensor digital status ON
							-500 ... 5000	Temperature value -50.0 ... 500.0°C
Room humi- dity	31 103	31 103	31,303	31 403	FormatHumi- dity	Unsigned short	0 ... 100	Humidity in %
							65535	No value available
Flow tempe- rature set- point	31 104	31 104	31 304	31 404	Format setpoints	signed short	-32768	No setpoint request active
							1	No setpoint request active
							50	Temperature value 5.0 ... 500.0°C
Flow temperature	31 105	31 205	31 305	31 405	Sensor format	signed short	-32768	No sensor
							-32767	Sensor interruption
							-32766	Sensor short circuit
							-32758	Sensor digital status OFF
							-32757	Sensor digital status ON
							-500 ... 5000	Temperature value -50.0 ... 500.0°C

3 Data points

Values that can be read and written

<u>Data value</u>	<u>Modbus</u> Heating cir- cuit 1	<u>Modbus</u> Heating cir- cuit 2	<u>Modbus</u> Heating circuit 3	<u>Modbus</u> Heating circuit 4	<u>Format</u>	<u>Data type</u>	<u>Value</u>	<u>Function</u>
Operating mode	41 103	41 203	41 303	41 403	FormatHeating circuitOperating mode	Unsigned short	0	AUTOMATIC
							1	COMFORT
							2	NORMAL
							3	LOWERING OPERATION
							4	STANDBY
							5 ... 65535	Undefined
Room temperature setpoint Comfort	41 105	41 205	41 305	41 405	Format setpoint	Unsigned short	-32768	No setpoint request active
							1	No setpoint request active
							50	Temperature value 5.0 ... 500.0°C
Room temperature setpoint Normal	41 106	41 206	41 306	41 406	Format setpoint	Unsigned short	-32768	No setpoint request active
							1	No setpoint request active
							50	Temperature value 5.0 ... 500.0°C
Room temperature setpoint reduction	41 107	41,207	41 307	41 407	FormatTargetVa- lue	Unsigned short	-32768	No setpoint request active
							1	No setpoint request active
							50	Temperature value 5.0 ... 500.0°C
Heating Constant tempera- ture	41 110	41 210	41 310	41 410	Format setpoint	Unsigned short	-32768	No setpoint request active
							1	No setpoint request active
							50	Temperature value 5.0 ... 500.0°C
Heating Constant tempera- ture Reduction	41 111	41 211	41 311	41 411	Format setpoint	Unsigned short	-32768	No setpoint request active
							1	No setpoint request active
							50	Temperature value 5.0 ... 500.0°C
Cool Constant tempera- ture	41 112	41 212	41 312	41 412	Format setpoint	Unsigned short	-32768	No setpoint request active
							1	No setpoint request active
							50	Temperature value 5.0 ... 500.0°C

3 Data points

3.4 Data points hot water

Values that can only be read

Data value	Modbus	Format	Data type	Value	Function
Hot water setpoint temperature	32 101	Format setpoint	signed short	-32768	No setpoint request active
				1	No setpoint request active
				50	Temperature value 5.0 ... 500.0°C
Hot water temperature	32 102	Sensor format	signed short	-32768	No sensor
				-32767	Sensor interruption
				-32766	Sensor short circuit
				-32758	Sensor digital status OFF
				-32757	Sensor digital status ON
				-500 ... 5000	Temperature value -50.0 ... 500.0°C

Values that can be read and written

Data value	Modbus	Format	Data type	Value	Function
Hot water push	42 102	FormatHot wa- terPush	Unsigned short	0	Off (timer inactive)
				5 ... 240	5 ... 240 minutes
Hot water normal	42 103	Format setpoint	Unsigned short	-32768	No setpoint request active
				1	No setpoint request active
				50	Temperature value 5.0 ... 500.0°C
Hot water reduction	42 104	Format setpoint	Unsigned short	-32768	No setpoint request active
				1	No setpoint request active
				50	Temperature value 5.0 ... 500.0°C

3 Data points

3.5 Data points heat pump

Values that can only be read

Data value	Modbus	Format	Data type	Value	Function
Operation	33 101	Format Operating status display		0	Undefined
				1	Relay test
				2	Emergency stop
				3	DIAGNOSTICS
				4	MANUAL OPERATION
				5	MANUAL OPERATION_HEATING
				6	MANUAL OPERATION_COOLING
				7	MANUAL_DEFROSTING_OPERATION
				8	DEFROST
				9	WEZ2 (example: heating rod)
				10	EVU_BLOCK
				11	SG_TARIFF
				12	SG_MAXIMUM
				13	TARIFF LOAD
				14	INCREASED_OPERATION
				15	STANDBY TIME
				16	STANDBY OPERATION
				17	RINSING OPERATION
				18	FROST PROTECTION
				19	HEATING OPERATION
				20	HOT WATER OPERATION
				21	LEGIONELLA PROTECTION
				22	SWITCHING_Heating-Cooling
				23	COOLING OPERATION
				24	PASSIVE COOLING
				25	SUMMER OPERATION
				26	SWIMMING POOL
				27	HOLIDAYS
				28	SCREED
				29	Locked
				30	LOCK_AT
				31	LOCK_SUMMER
				32	CLOSURE_WINTER
				33	OPERATING LIMIT
				34	HK_LOCK
35	READINESS				

3 Data points

				36	REGENERATIVE
				37	SGR3_HEATING
				38	SGR3_COOLING
				39	SGR3_HOT WATER
				40	SGR4_HEATING
				41	SGR4_COOLING
				42	SGR4_HOT WATER
				43	OIL RETURN
				44 ... 65535	undefined
Fault message	33 102	Format error-free	Unsigned short	0	Error active
				1	Fault-free operation
				2 ... 65535	Undefined
Power request	33 103	FormatPower value	Unsigned short	0	0 ... 100% power
Flow temperature	33 104	Format sensor	signed short	-32768	No sensor
				-32767	Sensor interruption
				-32766	Sensor short circuit
				-32758	Sensor digital status OFF
				-32757	Sensor digital status ON
				-500 ... 5000	Temperature value -50.0 ... 500.0°C
Return temperature	33 105	Sensor format	signed short	-32768	No sensor
				-32767	Sensor interruption
				-32766	Sensor short circuit
				-32758	Sensor digital status OFF
				-32757	Sensor digital status ON
				-500 ... 5000	Temperature value -50.0 ... 500.0°C
Hydraulic separator temperature	33 108	Sensor format	signed short	-32768	No sensor
				-32767	Sensor interruption
				-32766	Sensor short circuit
				-32758	Sensor digital status OFF
				-32757	Sensor digital status ON
				-500 ... 5000	Temperature value -50.0 ... 500.0°C
Regenerative	33 109	Sensor format	signed short	-32768	No sensor
				-32767	Sensor interruption
				-32766	Sensor short circuit
				-32758	Sensor digital status OFF
				-32757	Sensor digital status ON
				-500 ... 5000	Temperature value -50.0 ... 500.0°C
Buffer	33 110	Sensor format	signed short	-32768	No sensor
				-32767	Sensor interruption

3 Data points

				-32766	Sensor short circuit
				-32758	Sensor digital status OFF
				-32757	Sensor digital status ON
				-500 ... 5000	Temperature value -50.0 ... 500.0°C
Total flow (B7)	33 111	Sensor format	signed short	-327	No sensor
				-32767	Sensor interruption
				-32766	Sensor short circuit
				-32758	Sensor digital status OFF
				-32757	Sensor digital status ON
				-500 ... 5000	Temperature value -50.0 ... 500.0°C

3.6 Data points 2nd. heat generator

Values that can only be read

Data value	Modbus	Format	Data type	Value	Function
Status 2nd HP	34 101	FormatDigital	unsigned short	0	OFF
				1	ON
				2 ... 65535	Undefined
Operating hours 2nd HP	34 102	FormatOperating hours	unsigned short	0	Counter reading 0 ... 65535 h
Status of electric heating 1	34 104	FormatDigital	unsigned short	0	OFF
				1	ON
				2 ... 65535	Undefined
Status of electric heating 2	34 105	FormatDigital	unsigned short	0	OFF
				1	ON
				2 ... 65535	Undefined
Operating hours E1	34 106	FormatOperating hours	unsigned short	0 ... 65535	Counter reading 0 ... 65535 h
Operating hours E2	34 107	Format operating hours	unsigned short	0 ... 65535	Counter reading 0 ... 65535 h

3 Data points

3.7 Data points Inputs

Values that can only be read

Data value	Modbus	Format	Data type	Value	Function
SG-Ready 1	35 101	FormatDigital	unsigned short	0	OFF
				1	ON
				2 ... 65535	Undefined
SG-Ready 2	35 102	FormatDigital	unsigned short	0 ... 65535	Counter reading 0 ... 65535 h
Input H1.2	35 103	Format sensor	signed short	-32768	No sensor
				-32767	Sensor interruption
				-32766	Sensor short circuit
				-32758	Sensor digital status OFF
				-32757	Sensor digital status ON
				-500 ... 5000	Temperature value -50.0 ... 500.0°C
Input H1.3	35 104	Sensor format	signed short	-32768	No sensor
				-32767	Sensor interruption
				-32766	Sensor short circuit
				-32758	Sensor digital status OFF
				-32757	Sensor digital status ON
				-500 ... 5000	Temperature value -50.0 ... 500.0°C
Input H1.4	35 105	Sensor format	signed short	-32768	No sensor
				-32767	Sensor interruption
				-32766	Sensor short circuit
				-32758	Sensor digital status OFF
				-32757	Sensor digital status ON
				-500 ... 5000	Temperature value -50.0 ... 500.0°C
Input H1.5	35 106	Sensor format	signed short	-32768	No sensor
				-32767	Sensor interruption
				-32766	Sensor short circuit
				-32758	Sensor digital status OFF
				-32757	Sensor digital status ON
				-500 ... 5000	Temperature value -50.0 ... 500.0°C
Input DE1	35 107	Format Digital	unsigned short	0 ... 65535	Counter reading 0 ... 65535 h
Input DE2	35 108	FormatDigital	unsigned short	0 ... 65535	Counter reading 0 ... 65535 h

Recommendation: Hardware connection of inputs H1 and H2 for PV own consumption power.

See chapter:Options for PV integration

3 Data points

3.8 Data points statistics

Values that can only be read

Data value	Modbus	Format	Data type	Value	Function
Total energy today	36 101	FormatEnergy	unsigned short	0 ... 65535	Energy 0 ... 65535 in kWh
Total energy yesterday	36 102	FormatEnergy	unsigned short	0 ... 65535	Energy 0 ... 65535 in kWh
Total energy for the month	36 103	Energy format	unsigned short	0 ... 65535	Energy 0 ... 65535 in kWh
Total energy for the year	36 104	Energy format	unsigned short	0 ... 65535	Energy 0 ... 65535 in kWh
Heating energy today	36 201	FormatEnergy	unsigned short	0 ... 65535	Energy 0 ... 65535 in kWh
Heating energy yesterday	36 202	Energy format	unsigned short	0 ... 65535	Energy 0 ... 65535 in kWh
Heating energy month	36 203	Energy format	unsigned short	0 ... 65535	Energy 0 ... 65535 in kWh
Heating energy year	36 204	Energy format	unsigned short	0 ... 65535	Energy 0 ... 65535 in kWh
Hot water energy today	36 301	FormatEnergy	unsigned short	0 ... 65535	Energy 0 ... 65535 in kWh
Hot water energy yesterday	36 302	FormatEnergy	unsigned short	0 ... 65535	Energy 0 ... 65535 in kWh
Hot water energy month	36 303	Energy format	unsigned short	0 ... 65535	Energy 0 ... 65535 in kWh
Hot water energy year	36 304	Energy format	unsigned short	0 ... 65535	Energy 0 ... 65535 in kWh
Cooling energy today	36 401	FormatEnergy	unsigned short	0 ... 65535	Energy 0 ... 65535 in kWh
Cooling energy yesterday	36 402	Energy format	unsigned short	0 ... 65535	Energy 0 ... 65535 in kWh
Cooling energy month	36 403	Energy format	unsigned short	0 ... 65535	Energy 0 ... 65535 in kWh
Cooling energy year	36 404	Energy format	unsigned short	0 ... 65535	Energy 0 ... 65535 in kWh

4 Options for PV integration

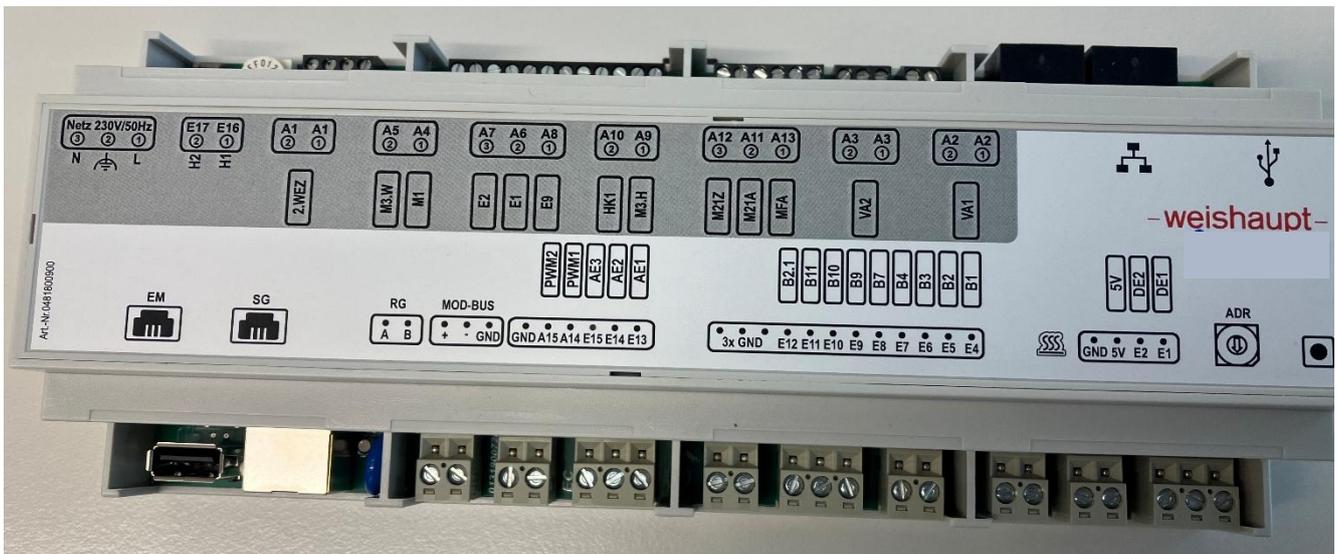
There are various options for integrating the heating system into the PV self-consumption concept. If a heat pump is to be integrated into the PV self-consumption concept, you should ensure that the heat pump is not switched off and on too often to reduce compressor starts. Otherwise, the service life will be shortened.

Another aspect to consider when integrating the heat pump into the PV self-consumption concept is that if the heat pump is switched to increased operation, the calculated COP/JAZ will be worse, because the heat pump will be operating with lower efficiency.

The following section lists various options for integrating a heating system into a PV self-consumption concept.

4.1 Analogue power setting for the heat pump

It is possible to specify a power setting for the heat pump via the analogue input AE1 (terminal E13). However, this analogue input is not available on all heat pumps. The following heat pumps currently have this input: WAB, WGB, WBB



An active power setting disables the current SG-Ready function and overrides it. This means that an EVU lock is lifted by a PV power setting.

Caution with cascade systems: The cascade control is disabled and the power must be specified separately for each heat pump.

4 Options for PV integration

The power requirement specified via AE1 (4-20 mA) is overridden by the internally determined power value. The highest power value is forwarded to the heat pump.

If no internal heating request is active, the following applies when a power signal is present

- the main pump is switched on at heating mode speed
- flow monitoring is activated
- the configured start phase (start power/start time) is maintained

Manual operation heating/cooling or diagnostics takes precedence over power control. External power control is also activated when buffer operation is active.

Analogue input AE1 4..20 mA:

For wiring, see the device manual.

Similar to the input for remote power control, it should be possible to specify the electrical power here:

- Minimum current 4.0 mA
- Minimum power limit: 20%
- Maximum current 20.0 mA
- Maximum power limit: 100%

The input signal operates with a fixed switching threshold of 0.5 mA. Within the switching band, the last detected value remains active.

START ≥ 4 mA -> Minimum power / power characteristic curve

STOP < 3.5 mA -> OFF – no request active

As there is no temperature setpoint, the alternative energy generators are NOT enabled unless there is a heating setpoint in the system, as these are switched via temperature differences! A configured sleep mode also limits the maximum power.

When specifying the power output, please take care about the internal control time of the heat pump/heating system. It is recommended to monitor the flow temperature as feedback for the power output specification and to adjust the power output specification according to the change in flow temperature.

4.2 Increased operation via digital inputs

The heat pump can be switched to different operating modes via the digital inputs.

The status changes of the inputs are not saved in the EEPROM. They could be switched more frequently. Take care about the response time of the heatpump. The function of the digital inputs must be configured on the device. The possible functions and the possible wiring can be found in the heat generator manual.

SGready contact: With the smart grid function (SG Ready), the heat pump can be operated with electricity from a photovoltaic system.

Increased operation: This can only be used if the heating circuit is set to comfort and the system operating mode is set to automatic or heating. Then inputs H1 and H2 can be wired via a relay circuit.

Switching states

Please refer to the connection diagram. See the heat pump manual.

The smart grid function offers the following options:

Operating mode	Function	SGR1 Input H1	SGR2 Input H2
1: Lock (utility power interruption lock)	Heating mode and hot water charging blocked, frost protection ensured	Close	Open
2: Normal operation	Hot water and heating operation regulated to target temperature	Open	Open
3: Increased operation (excess electricity supply)	<p>The set SG Ready increase is added to the flow setpoint temperature in heating mode and the hot water setpoint temperature.</p> <p>The increase applies to:</p> <ul style="list-style-type: none"> - Heating mode - Hot water charging <p>In heating mode, the SG Ready increase refers to the room setpoint temperature. This means that the room setpoint temperature is increased and thus the flow setpoint temperature is also increased.</p>	Open	Close
4: Forced operation (excess electricity supply)	Heat pump and electric heating are in heating mode and hot water charging is in operation up to the respective maximum temperature.	Close	Close
The switch position can be inverted on the device. See heat generator manual			

4.3 Data point for PV own electricity consumption

Data value	Modbus	Format	Data	Value	Function
Setpoint PV	40 002	FormatPV	Unsigned short	0 ... 65535	Current PV energy in watts (0 ... 65.535 kW)

The parameter Setpoint PV is a parameter that is not written to the EEPROM. Therefore, there are no restrictions here.

This parameter can be used to specify a power output in W that the heat pump is allowed to use for heating.

If the value 0 is written, this function is deactivated again and the heat pump regulates again based on the temperatures and specifications.

This power value has an effect regardless of whether operation is required or not. The compressor should operate at the specified electrical power. Important: the temperature monitoring of the minimum and maximum limits also has an effect with this control.

If power control becomes active (setpoint > 0 W) and this setpoint is greater than the power correction (adjustable parameter), the compressor is activated with the desired electrical power.

- Activation of the set SGReady offset for hot water preparation (5K)
- Activation of the set SGReady offset for the heating circuits
- Compressor control according to electrical power

Pay attention to the response time of the heat pump. If the temperature in heating/hot water mode is lower than the switch-on temperature difference, the parameter is not taken into account.

An active power specification deactivates the current SG-Ready function and overrides it. This means that an utility power interrupt lock is lifted by a PV power specification.

4.4 Use of modulating heating elements

Use of a heating rod that can be controlled in a modulating manner. A buffer storage tank (heating mode) or drinking water storage tank is required here.

Advantage of a heating element: it can be controlled every minute to match the actual output of the PV system. No reaction times, operating modes, cycles, etc. need to be taken into account. The Weishaupt product range offers suitable solutions for both applications. The Weishaupt branch can provide advice and support here.

Das ist Zuverlässigkeit. C'est la fiabilité. That's reliability. Questa è affidabilità. 信頼性とは、ころいろものです。Това е надеждност. Ez a megbízhatóság. Đó là sự đáng tin cậy. اردن رقابلهت المكون ان است To je zanesljivost. Güvence budur. Αυτό σημαίνει αξιοπιστία. 그것은 바로 신뢰성입니다. To je spol'ahlivost'. Dat is betrouwbaarheid. Tämä on luotettavuutta. هذه هي الوثوقية See on usaldusväärsus. Pouzdana tvrtka. To jest niezawodność. นั่นคือความเชื่อถือได้ Це надійність. Isto é fiabilidade. To je spolehlivost. यही विश्वसनीयता है. Det är pålitlighet. תאמינות. Esto es fiabilidad. Это надёжность. Itulah kepercayaan. 值得信赖。Is é sin iontaofacht. Iyan ang maaasahan. Aceasta este fiabilitatea. اتى سوشو مے مو Tai - patikimumas. Det er pålitelighet. Tā ir uzticamība. Sa se fyab. To je pouzdanost. La fiabilité avant tout. Det er pålidelighed.