System Diagram
SolvisMax

Connection Diagrams and System Diagrams for the SolvisMax System

- Gas und Öl
- Fernwärme (with district heating)
- Pellet, third-party boiler
  - Teo
  - Vaero
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1 Information About These Instructions

This brochure contains basic instructions for the proper installation and operation of the system and system components.

We will give you tips on how to ensure that the system operates in an economical and environmentally friendly manner.

We recommend that you participate in a Solvis training course to ensure safe and proper installation.

As we are interested in improving our technical documentation, we appreciate feedback of any kind.

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A list of our international representatives is provided at www.solvis.com.

Please understand that the telephone numbers are reserved for use by our installers.

Interested system operators should contact their installer.

Symbols used

DANGER
Immediate danger, with serious health consequences and even death.

WARNING
Danger, with potentially serious health consequences.

CAUTION
Possible risk of moderate or light injury.

CAUTION
Risk of damage to unit or system.

Useful information, notes and work tips.

Change of document, referring to another document.

Energy-saving tip with suggestions on how to save energy. This reduces costs and helps protect the environment.
2 Gas, Öl, Fernwärme (District Heating), Pellet, Third-Party Boiler

2.1 SolvisMax Gas and Öl

2.1.1 Basic equipment

Fig. 1: SolvisMax Gas / SolvisMax Öl basic version with three mixed heating circuits – Part 1

* Only applies to SÖ,  ** Only applies to SX

**Equipment**
- SolvisControl 2 system controller
- Drinking water heating
- Two mixed heating circuits
- Solar circuit with one collector (field)
- Oil or gas condensing system
- An additional temperature-limited or mixed heating circuit

**Modules:**
- BD: Lightning protection box
- HKS-G: Heating circuit station, mixed
- AG-xx: Solar expansion vessel
- WWS: Hot water station
- SG-H: Heating circuit safety group
- SUS-MAX: Solar heat transfer station
- VTL-3: Distributor bar, 3-way

**Abbreviations**
- LA: Air separator
- AG: Expansion vessel
- SAS: Sludge separator
- SV: Safety valve
- SOL-SKV: Solar cap valve
- SV-SOL: Solar safety valve
- TWK: Drinking water network, cold connection
- TWZ: Drinking water network, circulation connection
- TWW: Drinking water network, hot connection
- V: Adjusting valve
- HK1-3: Heating circuit 1 to 3
- FA: Automatic firing system
- H-RL: Heating return
- H-VL: Heating flow
- STB: Safety temperature limiter
Fig. 2: SolvisMax Gas / SolvisMax Öl basic version with three mixed heating circuits – Part 2

This diagram is not a substitute for detailed technical planning. To ensure the correct function of the system, our installation, operating and maintenance instructions must be followed. When connecting a third-party boiler, do not rely solely on the information provided – consult the manufacturer of the boiler.

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2.1.2 East/west roof

Fig. 3: SolvisMax Gas / SolvisMax Öl with east-west roof, two mixed heating circuits – Part 1
* Only applies to SÖ, ** Only applies to SX

Equipment

- SolvisControl 2 system controller
- Drinking water heating
- Two mixed heating circuits
- Solar circuit with one collector (field)
- Oil or gas condensing system
- Additional collector (field) on the opposite half of the roof (east-west roof)

Modules:

- BD Lightning protection box
- HKS-G Heating circuit station, mixed
- AG-xx Solar expansion vessel
- WWS Hot water station
- SG-H Heating circuit safety group
- SÜS-MAX Solar heat transfer station
- VTL-3 Distributor bar, 3-way

Abbreviations

- LA Air separator
- AG Expansion vessel
- SAS Sludge separator
- SV Safety valve
- SOL-SKV Solar cap valve
- SV-SOL Solar safety valve
- TWK Drinking water network, cold connection
- TWW Drinking water network, hot connection
- TWZ Drinking water network, circulation connection
- V Adjusting valve
- HK1-3 Heating circuit 1 to 3
- FA Automatic firing system
- H-RL Heating return
- H-VL Heating flow
- STB Safety temperature limiter
- O Collector (field) on the east roof
- W Collector (field) on the west roof
Fig. 4: SolvisMax Gas / SolvisMax Öl with an east-west roof, two mixed heating circuits – Part 2

This diagram is not a substitute for detailed technical planning. To ensure the correct function of the system, our installation, operating and maintenance instructions must be followed. When connecting a third-party boiler, do not rely solely on the information provided – consult the manufacturer of the boiler.

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2.1.3 Solid fuel boiler

Fig. 5: SolvisMax Gas / SolvisMax Öl with a solid fuel boiler, two mixed heating circuits – Part 1
* Only applies to SÖ, ** Only applies to SX

Equipment
- SolvisControl 2 system controller
- Drinking water heating
- Two mixed heating circuits
- Solar circuit with one collector (field)
- Oil or gas condensing system
- additional solid fuel boiler

Modules:
- BD: Lightning protection box
- HKS-G: Heating circuit station, mixed
- AG-xx: Solar expansion vessel
- WWS: Hot water station
- SG-H: Heating circuit safety group
- SUS-MAX: Solar heat transfer station
- VTL-3: Distributor bar, 3-way
- PLAS: Buffer charging station

Abbreviations
- LA: Air separator
- AG: Expansion vessel
- SAS: Sludge separator
- SV: Safety valve
- SOL-SKV: Solar cap valve
- SV-SOL: Solar safety valve
- TWK: Drinking water network, cold connection
- TWW: Drinking water network, hot connection
- TZW: Drinking water network, circulation connection
- V: Adjusting valve
- FA: Automatic firing system
- HK1-3: Heating circuit 1 to 3
- H-RL: Heating return
- H/K-RL: Heating and boiler flow
- K-RL: Boiler return
- STB: Safety temperature limiter
- FBK: Solid fuel boiler
- TAS: Thermal discharge safety device
This diagram is not a substitute for detailed technical planning. To ensure the correct function of the system, our installation, operating and maintenance instructions must be followed. When connecting a third-party boiler, do not rely solely on the information provided – consult the manufacturer of the boiler.

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2.1.4 Swimming pool

*Fig. 7: SolvisMax Gas / SolvisMax Öl with swimming pool heating and two mixed heating circuits – Part 1

* Only applies to SÖ, ** Only applies to SX

**Equipment**
- SolvisControl 2 system controller
- Drinking water heating
- Two mixed heating circuits
- Solar circuit with one collector (field)
- Oil or gas condensing system
- Solar swimming pool heating

**Modules:**
- BD: Lightning protection box
- HKS-G: Heating circuit station, mixed
- AG-xx: Solar expansion vessel
- WWS: Hot water station
- SG-H: Heating circuit safety group
- SÜS-MAX: Solar heat transfer station
- VTL-2: Distributor bar, 2-way
- RF: Pool sensor BE-SC-2-O-SEN

**Abbreviations**
- LA: Air separator
- AG: Expansion vessel
- SAS: Sludge separator
- SV: Safety valve
- SOL-SKV: Solar cap valve
- SV-SOL: Solar safety valve
- TWK: Drinking water network, cold connection
- TWW: Drinking water network, hot connection
- TWZ: Drinking water network, circulation connection
- FA: Automatic firing system
- H-RL: Heating return
- H-VL: Heating flow
- STB: Safety temperature limiter
- Pool: Swimming pool
- R3: Connection for room sensor 3
- SC2: SolvisControl 2
Fig. 8: SolvisMax Gas / SolvisMax Öl with swimming pool heating and two mixed heating circuits – Part 2

This diagram is not a substitute for detailed technical planning. To ensure the correct function of the system, our installation, operating and maintenance instructions must be followed. When connecting a third-party boiler, do not rely solely on the information provided – consult the manufacturer of the boiler.

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2.1.5 Additional storage tank

Fig. 9: SolvisMax Gas/Öl, 2 storage tanks with a solid fuel boiler, two mixed heating circuits – Part 1
* Only applies to SÖ, ** Only applies to SX

Equipment
• SolvisControl 2 system controller
• Drinking water heating
• Two mixed heating circuits
• Solar circuit with one collector (field)
• Oil or gas condensing system
• additional solid fuel boiler
• additional storage (SolvisStrato)

Modules:
- BD Lightning protection box
- HKS-G Heating circuit station, mixed
- AG-xx Solar expansion vessel
- WWS Hot water station
- SG-H Heating circuit safety group
- SÜS-MAX Solar heat transferstation
- VTL-3 Distributor bar, 3-way
- PLAS Buffer charging station

Abbreviations
- LA Air separator
- AG Expansion vessel
- SAS Sludge separator
- SV Safety valve
- SOL-SKV Solar cap valve
- SV-SOL Solar safety valve
- TWK Drinking water network, cold connection
- TWW Drinking water network, hot connection
- TZ Drinking water network, circulation connection
- V Adjusting valve
- FA Automatic firing system
- HK1-3 Heating circuit 1 to 3
- H-VL Heating flow
- SR xx Connection to SolvisStrato
- STB Safety temperature limiter
- FBK Solid fuel boiler
- TAS Thermal discharge safety device
Fig. 10: SolvisMax Gas/Öl, two storage tanks with a solid fuel boiler, two mixed heating circuits – Part 2

This diagram is not a substitute for detailed technical planning. To ensure the correct function of the system, our installation, operating and maintenance instructions must be followed. When connecting a third-party boiler, do not rely solely on the information provided – consult the manufacturer of the boiler.

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2.2 SolvisMax Fernwärme (with district heating)

Equipment
- SolvisControl 2 system controller
- Drinking water heating
- Two mixed heating circuits
- Solar circuit with one collector (field)
- Building control station for district heating
- Additional solid fuel boiler

Modules:
- BD: Lightning protection box
- HKS-G: Heating circuit station, mixed
- AG-xx: Solar expansion vessel
- WWS: Hot water station
- SG-H: Heating circuit safety group
- SÜS-MAX: Solar heat transfer station
- VTL-3: Distributor bar, 3-way
- PLAS: Buffer charging station

Abbreviations
- LA: Air separator
- AG: Expansion vessel
- SAS: Sludge separator
- SV: Safety valve
- SOL-SKV: Solar cap valve
- SV-SOL: Solar safety valve
- TWK: Drinking water network, cold connection
- TWW: Drinking water network, hot connection
- TWZ: Drinking water network, circulation connection
- V: Adjusting valve
- HK1-3: Heating circuit 1 to 3
- FW-RL: District heating return
- FW-VL: District heating flow
- H/K-VL: Heating and boiler return
- H/K-VL: Heating and boiler flow
- K-RL: Boiler return
- mTW: Mechanical temperature controller
- FBK: Solid fuel boiler
- TAS: Thermal discharge safety device
This diagram is not a substitute for detailed technical planning. To ensure the correct function of the system, our installation, operating and maintenance instructions must be followed. When connecting a third-party boiler, do not rely solely on the information provided – consult the manufacturer of the boiler.

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### 2.3 SolvisMax Solo with SolvisLino 4

#### 2.3.1 Basic equipment

**Fig. 13: SolvisMax Solo basic version with SolvisLino 4 and three mixed heating circuits – Part 1**

**Equipment**
- SolvisControl 2 system controller
- Drinking water heating
- Two mixed heating circuits
- Solar circuit with one collector (field)
- Adjacent SolvisLino pellet boiler
- Buffer load circuit without return increase with speed-controlled load pump
- An additional temperature-limited or mixed heating circuit

**Modules:**
- BD: Lightning protection box
- HKS-G: Heating circuit station, mixed
- AG-xx: Solar expansion vessel
- WWS: Hot water station
- SG-H: Heating circuit safety group
- SÜS-MAX: Solar heat transferstation
- VTL-3: Distributor bar, 3-way
- PLAS: Buffer charging station

**Abbreviations**
- LA: Air separator
- AG: Expansion vessel
- SAS: Sludge separator
- SV: Safety valve
- SOL-SKV: Solar cap valve
- SV-SOL: Solar safety valve
- TWK: Drinking water network, cold connection
- TWW: Drinking water network, hot connection
- TWZ: Drinking water network, circulation connection
- \(\bar{V}\): Adjusting valve
- HK1-3: Heating circuit 1 to 3
- H/K-VL: Heating and boiler return
- H/K-VL: Heating and boiler flow
Fig. 14: SolvisMax Solo basic version with SolvisLino 4 and three mixed heating circuits – Part 2

This diagram is not a substitute for detailed technical planning. To ensure the correct function of the system, our installation, operating and maintenance instructions must be followed. When connecting a third-party boiler, do not rely solely on the information provided – consult the manufacturer of the boiler.

Requirement for operating SolvisLino 4 without return increase:

- Properly functioning speed control of the buffer load pump by SolvisControl 2 in software version MA201 or later
- Using the PLAS (unmixed) buffer charging station
- Connection of SolvisLino according to connection diagram.

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2.3.2 East/west roof

**Fig. 15: SolvisMax Solo with an east-west roof, SolvisLino 4 and two mixed heating circuits – Part 1**

**Equipment**
- SolvisControl 2 system controller
- Drinking water heating
- Two mixed heating circuits
- Solar circuit with one collector (field)
- Adjacent SolvisLino pellet boiler
- Buffer load circuit without return increase with speed-controlled load pump
- Additional collector(field) on the opposite half of the roof (east-west roof)

**Modules:**
- BD Lightning protection box
- HKS-G Heating circuit station, mixed
- AG-xx Solar expansion vessel
- WWS Hot water station
- SG-H Heating circuit safety group
- SÜS-MAX Solar heat transfer station
- VTL-3 Distributor bar, 3-way
- PLAS Buffer charging station

**Abbreviations**
- LA Air separator
- AG Expansion vessel
- SAS Sludge separator
- SV Safety valve
- SOL-SKV Solar cap valve
- SV-SOL Solar safety valve
- TWK Drinking water network, cold connection
- TWW Drinking water network, hot connection
- TWZ Drinking water network, circulation connection
- V Adjusting valve
- HK1-2 Heating circuit 1 to 2
- H/K-VL Heating and boiler return
- H/K-VL Heating and boiler flow
- O Collector (field) on the east roof
- W Collector (field) on the west roof
Fig. 16: SolvisMax Solo with an east-west roof, SolvisLino 4 and two mixed heating circuits – Part 2

This diagram is not a substitute for detailed technical planning. To ensure the correct function of the system, our installation, operating and maintenance instructions must be followed. When connecting a third-party boiler, do not rely solely on the information provided – consult the manufacturer of the boiler.

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Requirement for operating SolvisLino 4 without return increase:

- Properly functioning speed control of the buffer load pump by SolvisControl 2 in software version MA201 or later
- Using the PLAS (unmixed) buffer charging station
- Connection of SolvisLino according to connection diagram.
### 2.3.3 Solid fuel boiler

**Equipment**
- SolvisControl 2 system controller
- Drinking water heating
- Two mixed heating circuits
- Solar circuit with one collector (field)
- Adjacent SolvisLino pellet boiler
- Buffer load circuit without return increase with speed-controlled load pump
- Additional solid fuel boiler

**Modules:**
- BD: Lightning protection box
- HKS-G: Heating circuit station, mixed
- AG-xx: Solar expansion vessel
- WWS: Hot water station
- SG-H: Heating circuit safety group
- SÜS-MAX: Solar heat transferation
- VTL-3: Distributor bar, 3-way
- PLAS: Buffer charging station

**Abbreviations**
- LA: Air separator
- AG: Expansion vessel
- SAS: Sludge separator
- SV: Safety valve
- SOL-SKV: Solar cap valve
- SV-SOL: Solar safety valve
- TWK: Drinking water network, cold connection
- TWW: Drinking water network, hot connection
- TWZ: Drinking water network, circulation connection
- V: Adjusting valve
- HK1-2: Heating circuit 1 to 2
- H/K-VL: Heating and boiler return
- H/K-RL: Heating and boiler flow
- K-RL: Boiler return
- FBK: Solid fuel boiler
- TAS: Thermal discharge safety device

*Fig. 17: SolvisMax Solo with SolvisLino 4, a solid fuel boiler and two mixed heating circuits – Part 1*
Requirement for operating SolvisLino 4 without return increase:

- Properly functioning speed control of the buffer load pump by SolvisControl 2 in software version MA201 or later
- Using the PLAS (unmixed) buffer charging station
- Connection of SolvisLino according to connection diagram.
2.3.4 Additional storage tank

Fig. 19: SolvisMax Solo with SolvisLino 4, a second storage tank, a solid fuel boiler, two mixed heating circuits – Part 1

Equipment
• SolvisControl 2 system controller
• Drinking water heating
• Two mixed heating circuits
• Solar circuit with one collector (field)
• Adjacent SolvisLino pellet boiler
• additional solid fuel boiler
• additional storage (SolvisStrato)

Modules:
BD  Lightning protection box
HKS-G Heating circuit station, mixed
AG-xx Solar expansion vessel
WWS Hot water station
SG-H Heating circuit safety group
SÜS-MAX Solar heat transfer station
VTL-3 Distributor bar, 3-way
PLAS Buffer charging station

Abbreviations
LA Air separator
AG Expansion vessel
SAS Sludge separator
SV Safety valve
SOL-SKV Solar cap valve
SV-SOL Solar safety valve
TWK Drinking water network, cold connection
TWW Drinking water network, hot connection
TWZ Drinking water network, circulation connection
V Adjusting valve
HK1-3 Heating circuit 1 to 3
H-VL Heating flow
SR xx Connection to SolvisStrato
FBK Solid fuel boiler
TAS Thermal discharge safety device
Fig. 20: SolvisMax Solo with SolvisLino 4, a second storage tank, a solid fuel boiler, two mixed heating circuits – Part 2

This diagram is not a substitute for detailed technical planning. To ensure the correct function of the system, our installation, operating and maintenance instructions must be followed. When connecting a third-party boiler, do not rely solely on the information provided – consult the manufacturer of the boiler.

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2.4 SolvisMax Solo with third-party boiler

2.4.1 Basic equipment

**Fig. 21: SolvisMax Solo basic version with third-party boiler and three mixed heating circuits – Part 1**

**Equipment**
- SolvisControl 2 system controller
- Drinking water heating
- Two mixed heating circuits
- Solar circuit with one collector (field)
- Adjacent customer-provided boiler (third-party boiler)
- An additional temperature-limited or mixed heating circuit

**Modules:**
- BD: Lightning protection box
- HKS-G: Heating circuit station, mixed
- AG-xx: Solar expansion vessel
- WWS: Hot water station
- SG-H: Heating circuit safety group
- SÜS-MAX: Solar heat transferstation
- VTL-3: Distributor bar, 3-way

**Abbreviations**
- LA: Air separator
- AG: Expansion vessel
- SAS: Sludge separator
- SV: Safety valve
- SOL-SKV: Solar cap valve
- SV-SOL: Solar safety valve
- TWK: Drinking water network, cold connection
- TWWW: Drinking water network, hot connection
- TWZ: Drinking water network, circulation connection
- V: Adjusting valve
- HK1-3: Heating circuit 1 to 3
- H/K-VL: Heating and boiler return
- H/K-VL: Heating and boiler flow
- FA: Automatic firing system
- FK: Third-party boiler
- FSB: Spring-loaded gravitational force brake
Fig. 22: SolvisMax Solo basic version with third-party boiler and three mixed heating circuits – Part 2

This diagram is not a substitute for detailed technical planning. To ensure the correct function of the system, our installation, operating and maintenance instructions must be followed. When connecting a third-party boiler, do not rely solely on the information provided – consult the manufacturer of the boiler.

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SOLVIS GmbH
2.4.2 East/west roof

![Diagram of SolvisMax Solo with third-party boiler, east-west roof, two mixed heating circuits – Part 1](image)

**Equipment**
- SolvisControl 2 system controller
- Drinking water heating
- Two mixed heating circuits
- Solar circuit with one collector (field)
- Adjacent customer-provided boiler (third-party boiler)
- Additional collector (field) on the opposite half of the roof (east-west roof)

**Modules:**
- BD: Lightning protection box
- HKS-G: Heating circuit station, mixed
- AG-xx: Solar expansion vessel
- WWS: Hot water station
- SG-H: Heating circuit safety group
- SÜS-MAX: Solar heat transfer station
- VTL-3: Distributor bar, 3-way

**Abbreviations**
- LA: Air separator
- AG: Expansion vessel
- SAS: Sludge separator
- SV: Safety valve
- SOL-SKV: Solar cap valve
- SV-SOL: Solar safety valve
- TWK: Drinking water network, cold connection
- TWW: Drinking water network, hot connection
- TWZ: Drinking water network, circulation connection
- V: Adjusting valve
- HK1-3: Heating circuit 1 to 3
- H/K-VL: Heating and boiler flow
- H/K-RL: Heating and boiler return
- FA: Automatic firing system
- FK: Third-party boiler
- FSB: Spring-loaded gravitational force brake
- O: Collector (field) on the east roof
- W: Collector (field) on the west roof
This diagram is not a substitute for detailed technical planning. To ensure the correct function of the system, our installation, operating and maintenance instructions must be followed. When connecting a third-party boiler, do not rely solely on the information provided – consult the manufacturer of the boiler.

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SOLVIS GmbH
2.4.3 Solid fuel boiler

**Equipment**
- SolvisControl 2 system controller
- Drinking water heating
- Two mixed heating circuits
- Solar circuit with one collector (field)
- Adjacent customer-provided boiler (third-party boiler)
- Additional solid fuel boiler

**Modules:**
- BD: Lightning protection box
- HKS-G: Heating circuit station, mixed
- AG-xx: Solar expansion vessel
- WWS: Hot water station
- SG-H: Heating circuit safety group
- SUS-MAX: Solar heat transfer station
- VTL-3: Distributor bar, 3-way
- PLAS: Buffer charging station

**Abbreviations**
- LA: Air separator
- AG: Expansion vessel
- SAS: Sludge separator
- SV: Safety valve
- SOL-SKV: Solar cap valve
- SV-SOL: Solar safety valve
- TWK: Drinking water network, cold connection
- TWW: Drinking water network, hot connection
- TWZ: Drinking water network, circulation connection
- V: Adjusting valve
- HK1-3: Heating circuit 1 to 3
- H/K-VL: Heating and boiler return
- H/K-VL: Heating and boiler flow
- K-RL: Boiler return
- FA: Automatic firing system
- FK: Third-party boiler
- FSB: Spring-loaded gravitational force brake
- FBK: Solid fuel boiler
- TAS: Thermal discharge safety device

Fig. 25: SolvisMax Solo with third-party boiler, solid fuel boiler, two mixed heating circuits – Part 1
This diagram is not a substitute for detailed technical planning. To ensure the correct function of the system, our installation, operating and maintenance instructions must be followed. When connecting a third-party boiler, do not rely solely on the information provided – consult the manufacturer of the boiler.

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### 2.5 Connection Diagram

#### 2.5.1 Connection table (system status)

**SolvisMax Gas, Öl, FW and Solo**

<table>
<thead>
<tr>
<th>Sensors (temperature sensors and volume flow encoders)</th>
<th>Actuators (pumps, signals and control valves)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inputs no.</strong></td>
<td><strong>Designation (sensor)</strong></td>
</tr>
<tr>
<td>S1</td>
<td>All</td>
</tr>
<tr>
<td>S2</td>
<td>All</td>
</tr>
<tr>
<td>S3</td>
<td>All</td>
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<td>All</td>
</tr>
<tr>
<td>S15</td>
<td>All</td>
</tr>
</tbody>
</table>

\(^1\) “All” = applies to “Normal”, “East-west roof”, “Solid fuel boiler” and “HC 3”.
\(^2\) Only applies to SolvisMax Solo
\(^3\) Only applies to SolvisMax Öl
\(^4\) Only applies to SolvisMax Fernwärme (with district heating)

- \(^1\) “Normal” = without option, “Solid fuel boiler” = additional solid fuel boiler or “HC 3” = additional mixed heating circuit
- \(^2\) Only applies to SolvisMax Solo
- \(^3\) Only applies to SolvisMax Öl
- \(^4\) Only applies to SolvisMax Fernwärme (with district heating)

**Burner requirement and modulation for SolvisLino 3**
2.5.2 Mains module

Fig. 27: SolvisControl 2 mains module for SolvisMax Gas, Öl, Fernwärme (with district heating) and Solo

* Exhaust safety temperature limiter (ESTL) only required in Switzerland

AL FBK  Solid fuel boiler alternative
AL OWD  East-west roof alternative
AL SL-LI  Alternative: SolvisSolo with SolvisLino 3/4
AL SO  Alternative connection for SolvisMax Öl
AL SX  Alternative connection for SolvisMax Gas
ESTL  Exhaust safety temperature limiter
BR  Jumper
EP  Expansion board, see → Fig. 42, p. 44

KBB-LI3-SC2  Burner cable for SolvisLino 3/4
KBB-SC-2  SolvisControl 2 sensor cable harness
KBB-SÜS  Sensor cable harness for solar heat transfer station
mSTL  Mechanical safety temperature limiter
WWS  Hot water station
ZR  Central controller interface
3 Heating Pumps

3.1 SolvisMax Teo (brine/water)

Fig. 28: SolvisMax Teo with SolvisTeo and two mixed heating circuits – Part 1

**Equipment**
- SolvisControl 2 system controller
- Drinking water heating
- Two mixed heating circuits
- Solar circuit with one collector (field)
- Adjacent SolvisTeo brine/water heating pump

**Modules:**
- BD Lightning protection box
- HKS-G Heating circuit station, mixed
- AG-xx Solar expansion vessel
- WWS Hot water station
- SG-H Heating circuit safety group
- SÜS-MAX Solar heat transfer station
- VTL-2 Distributor bar, 2-way
- SOS-SW Brine station

**Heat exchanger (brine support, option)**
1 From SolvisMax
2 To heating pump
3 From heat source
4 To collector

**Abbreviations**
- LA Air separator
- AG Expansion vessel
- SAS Sludge separator
- SV Safety valve
- SOL-SKV Solar cap valve
- SV-SOL Solar safety valve
- TWK Drinking water network, cold connection
- TWW Drinking water network, hot connection
- TWZ Drinking water network, circulation connection
- V Adjusting valve
- HK1-2 Heating circuit 1 to 2
- S-RL Solar return
- DW Brine pressure controller
- H-RL Heating return
- H-RL Heating flow
- WP-RL Heating pump return
- WQ-RL Heat source return
- WQ-VL Heat source flow
- WW-RL Hot water flow
This diagram is not a substitute for detailed technical planning. To ensure the correct function of the system, our installation, operating and maintenance instructions must be followed. When connecting a third-party boiler, do not rely solely on the information provided – consult the manufacturer of the boiler.

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SOLVIS GmbH
3.2 SolvisMax Vaero (air/water)

Fig. 30: SolvisMax Vaero with SolvisVaero, third-party boiler and two mixed heating circuits – Part 1

Equipment
- SolvisControl 2 system controller
- Drinking water heating
- Two mixed heating circuits
- Solar circuit with one collector (field)
- Adjacent SolvisVaero air/water heating pump
- Adjacent customer-provided boiler (third-party boiler)

Modules:
- BD Lighting protection box
- HKS-G Heating circuit station, mixed
- AG-xx Solar expansion vessel
- WWS Hot water station
- SG-H Heating circuit safety group
- SUS-MAX Solar heat transferstation
- VTL-2 Distributor bar, 2-way

Abbreviations
- LA Air separator
- AG Expansion vessel
- SAS Sludge separator
- SV Safety valve
- SOL-SKV Solar cap valve
- SV-SOL Solar safety valve
- TWK Drinking water network, cold connection
- TWW Drinking water network, hot connection
- TWZ Drinking water network, circulation connection
- V Adjusting valve
- HK1-2 Heating circuit 1 to 2
- H/K-VL Heating and boiler return
- H/K-VL Heating and boiler flow
- WP-RL Heating pump return
- WP-VL Heating pump flow
- HE House infed
- FA Automatic firing system
- FK Third-party boiler
- FSB Spring-loaded gravitational force brake
* Customer-provided boiler optional (third-party boiler)

This diagram is not a substitute for detailed technical planning. To ensure the correct function of the system, our installation, operating and maintenance instructions must be followed. When connecting a third-party boiler, do not rely solely on the information provided – consult the manufacturer of the boiler.
# 3 Heating Pumps

## 3.3 Connection Diagram

### 3.3.1 Connection table (system status)

<table>
<thead>
<tr>
<th>传感器（温度传感器和体积流量编码器）</th>
<th>部件（泵、信号和控制阀）</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input no.</td>
<td>Designation</td>
</tr>
<tr>
<td>S1</td>
<td>Sto. tank, top</td>
</tr>
<tr>
<td>S2</td>
<td>Hot water</td>
</tr>
<tr>
<td>S3</td>
<td>Sto. tank reference</td>
</tr>
<tr>
<td>S4</td>
<td>[Upper heating buffer (S4o) and lower heating buffer (S4u)]* / upper heating buffer**</td>
</tr>
<tr>
<td>S5</td>
<td>Solar flow 2</td>
</tr>
<tr>
<td>S6</td>
<td>Solar return 2</td>
</tr>
<tr>
<td>S7</td>
<td>Solar flow 1</td>
</tr>
<tr>
<td>S8</td>
<td>Collector</td>
</tr>
<tr>
<td>S9</td>
<td>Heating pump return* / lower heating buffer**</td>
</tr>
<tr>
<td>S10</td>
<td>Outdoor temperature</td>
</tr>
<tr>
<td>S11</td>
<td>Flow for heating circuit 1</td>
</tr>
<tr>
<td>S12</td>
<td>Flow for heating circuit 2</td>
</tr>
<tr>
<td>S13</td>
<td>Brine flow* / heating pump return**</td>
</tr>
<tr>
<td>S14</td>
<td>Brine return* / heating pump flow**</td>
</tr>
<tr>
<td>S15</td>
<td>Solar return 1</td>
</tr>
<tr>
<td>S16</td>
<td>Solar volume flow encoder</td>
</tr>
<tr>
<td>S17</td>
<td>Water volume flow encoder</td>
</tr>
<tr>
<td>S3/A12</td>
<td>Low/high press. add-on* / defrosting signal**</td>
</tr>
<tr>
<td>I-1</td>
<td>Integrated heating pump controller (IWS) malfunction**</td>
</tr>
<tr>
<td>I-2</td>
<td>Block time</td>
</tr>
<tr>
<td>I-3</td>
<td>(Unused)</td>
</tr>
<tr>
<td>R1</td>
<td>Room control element for heating circuit 1 (optional)</td>
</tr>
<tr>
<td>R2</td>
<td>Room control element for heating circuit 2 (optional)</td>
</tr>
<tr>
<td>ST1</td>
<td>Brine pressure controller* / jumper**</td>
</tr>
<tr>
<td>ST2</td>
<td>Brine leak* / jumper**</td>
</tr>
</tbody>
</table>

*Only applies to SolvisMax Teo

**Only applies to SolvisMax Vaero
3.3.2 Mains module

Fig. 32: SolvisControl 2 mains module for SolvisMax Vaero and SolvisMax Teo

1. Connection, see KBB-SC-2 SolvisControl 2 sensor cable harness
2. No power AB-B KBB-SÜS Sensor cable harness for solar heat transfer station
EP Expansion board, see Fig. 42, p. 44 R1, R2 Room control element for heating circuits 1 and 2
AP WWS Hot water station adapter plate RB Relay box, see
AP SUS Solar heat transfer station adapter plate R Main switch
AB(Px) Junction box outlet strip (SolvisVaero) ST2 BR or brine circuit pressure controller (SolvisTeo)
BR Jumper via L and 13 SUM Sensor switching module, see
br Brown connection cable ws White connection cable
DW Pressure controller (optional, remove jumper at ST2) ZR Central controller interface
3.3.3 SolvisTeo connection

Brine pump controls

Fig. 33: Version 1: Pump with connection for O-1 control line (analogue, 0 – 10 V, brine station)

Fig. 34: Version 2: Pump without connection for O-1 control line (analogue, 0 – 10 V)

Fig. 35: Version 3: Pump with AC motor

br Brown connection cable
Kxx Brine pump junction box
L1 Phase
L2 Phase
L3 Phase
M Motor

N Neutral conductor
NBG Mains module
PE Protective earth
Sch Contactor
WQP Heat source pump
ws White connection cable
Relay box connection

Fig. 36: Connection of relay box between SolvisControl 2 and SolvisTeo

L1  Phase
L2  Phase
L3  Phase
N   Neutral conductor
PE  Protective earth

Connection of sensor switching module

Fig. 37: Sensor switching module on SolvisControl 2 for SolvisMax Teo
3.3.4 Connection of SolvisVaero

Junction box

![Diagram of Junction Box]

Fig. 38: Junction box

- **br**: Brown
- **bl**: Blue
- **we**: White
- **L**: Phase
- **L'**: Release phase from power supply company
- **M LP**: Load pump earth
- **N**: Neutral conductor
- **LP**: Load pump
- **SL**: Control line
- **PE**: Protective earth
- **WP ON**: Heating pump on
- **Block time**: Power supply company’s L’ from RSE
- **DHC**: Electrical auxiliary heater
- **RSE**: Ripple control receiver
- **PWM**: Pulse width modulation (speed control)
- **KH**: Ball valve
- **WP**: Heating pump
- **SC-2**: SolvisControl 2

---

SolvisMax  Subject to technical changes 08.16  ALS-MAX-7-EN SOLVIS
Power connection

Fig. 39: Power connection

<table>
<thead>
<tr>
<th>AB(Px)</th>
<th>Junction box outlet strip</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHC</td>
<td>Tankless water heater</td>
</tr>
<tr>
<td>IWS</td>
<td>Integrated heating pump controller</td>
</tr>
<tr>
<td>HE</td>
<td>House infeed</td>
</tr>
<tr>
<td>L</td>
<td>Phase 1 to 3</td>
</tr>
<tr>
<td>LP</td>
<td>Load pump</td>
</tr>
<tr>
<td>N</td>
<td>Neutral conductor</td>
</tr>
<tr>
<td>PE</td>
<td>Protective earth</td>
</tr>
<tr>
<td>RSE</td>
<td>Ripple control receiver</td>
</tr>
<tr>
<td>SC2</td>
<td>SolvisControl 2</td>
</tr>
<tr>
<td>WP</td>
<td>Heating pump</td>
</tr>
<tr>
<td>WM</td>
<td>Maintenance manager</td>
</tr>
<tr>
<td>X22</td>
<td>Maintenance manager for mains connector</td>
</tr>
</tbody>
</table>
Integrated heating pump controller (IWS)

Fig. 40: Integrated heating pump controller (IWS), mains voltage side

- **AB(Px)**: Junction box outlet strip
- **BHZ**: Drain-line heater
- **DHC**: Tankless water heater
- **E1**: Tankless water heater
- **E2**: Oil sump heater
- **F2**: High pressure controller
- **F5**: DHC safety temperature limiter
- **K1**: Contactor for resistor start-up
- **K2**: Contactor for compressor start-up
- **K5**: DHC relay level 1 (A6)
- **K6**: DHC relay level 2 (A13)
- **K7**: DHC relay level 2 (A13)
- **L**: Phase 1 to 3
- **M1**: Compressor motor
- **N**: Neutral conductor
- **N2**: Differential pressure switch for defrosting
- **PE**: Protective earth
- **WP**: Heating pump
- **X1**: Connection terminals
- **X23**: Earth connection block for mains connection
- **X31**: Oil sump heater connection terminal
Fig. 41: Integrated heating pump controller (IWS), low voltage side

A2  Integrated heating pump controller
B1  KTY heating pump (WP) flow sensor
B2  KTY heating pump (WP) flow sensor
B5  KTY hot gas sensor
B6  Pt1000 intake air sensor
B7  Pt1000 compressor inlet sensor
B8  Pt1000 compressor outlet sensor
B9  KTY antifreeze sensor
B10 Pt1000 injection sensor
L   Phase
M6  Fan motor
M7  Stepper motor for elec. expansion valve
M8  Stepper motor for elec. injection valve
N   Neutral conductor

P1  High pressure sensor
P3  Low pressure sensor
WM  Maintenance manager
X2  Low voltage terminal strip
X29 IWS plug, 12 pin – controller
X30 IWS plug, 3 pin – bus
X33 IWS plug, 5 pin – elec. expansion valve
X34 IWS plug, 7 pin – sensors
X35 IWS plug, 6 pin – temperature sensors
X36 IWS plug, 3 pin – fan
X37 IWS plug, 5 pin – elec. injection valve
X38 IWS plug, 3 pin – DHC
X39 Connection terminal for pressure sensors
X40 Earth connection terminal for temperature sensor
4 Expansion Board

4.1 Connection table

<table>
<thead>
<tr>
<th>Output no.</th>
<th>Designation (230 V mains connection)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solar pump 1</td>
</tr>
<tr>
<td>2</td>
<td>Solar pump 2</td>
</tr>
<tr>
<td>3</td>
<td>Hot water pump</td>
</tr>
</tbody>
</table>

4.2 Connection Diagram

![Connection Diagram](image)

Fig. 42: Expansion board for SolvisControl 2 mains module

KBB Cable harness

NBG SolvisControl 2 mains module

NB-SC2 SolvisControl 2 mains module
## 5 Explanation of Symbols

### 5.1 Hydraulic elements

#### Valves

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Shut-off valve or valve</td>
</tr>
<tr>
<td></td>
<td>Adjusting valve</td>
</tr>
<tr>
<td></td>
<td>Bleeding tap</td>
</tr>
<tr>
<td></td>
<td>Motor-driven mixing valve</td>
</tr>
<tr>
<td></td>
<td>Gravity brake</td>
</tr>
<tr>
<td></td>
<td>Safety valve</td>
</tr>
<tr>
<td></td>
<td>Thermostatic mixing valve</td>
</tr>
<tr>
<td></td>
<td>Solar cap valve</td>
</tr>
<tr>
<td></td>
<td>Boiler filling and draining valve</td>
</tr>
<tr>
<td></td>
<td>Thermal discharge safety device (TAS)</td>
</tr>
<tr>
<td></td>
<td>Three-way switching valve</td>
</tr>
<tr>
<td></td>
<td>Differential pressure control valve</td>
</tr>
</tbody>
</table>

#### Components

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Membrane expansion vessel</td>
</tr>
<tr>
<td></td>
<td>Oil or gas burner</td>
</tr>
<tr>
<td></td>
<td>Solar collector</td>
</tr>
<tr>
<td></td>
<td>Consumers in the heating circuit</td>
</tr>
<tr>
<td></td>
<td>General heat generator</td>
</tr>
<tr>
<td></td>
<td>Heat exchanger</td>
</tr>
<tr>
<td></td>
<td>Heat quantity counter</td>
</tr>
<tr>
<td></td>
<td>Solid fuel boiler (FBK) or pellet boiler (Lino 3)</td>
</tr>
<tr>
<td></td>
<td>Oil or gas boiler</td>
</tr>
<tr>
<td></td>
<td>Compressor (heating pump aggregate)</td>
</tr>
<tr>
<td></td>
<td>Electric heating cartridge</td>
</tr>
</tbody>
</table>
# 5 Explanation of Symbols

## Other hydraulic components

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="symbol" alt="Pressure controller, brine circuit" /></td>
<td>Pressure controller, brine circuit</td>
</tr>
<tr>
<td><img src="symbol" alt="Volume flow encoder" /></td>
<td>Volume flow encoder</td>
</tr>
<tr>
<td><img src="symbol" alt="Pump" /></td>
<td>Pump</td>
</tr>
<tr>
<td><img src="symbol" alt="Sludge separator" /></td>
<td>Sludge separator</td>
</tr>
<tr>
<td><img src="symbol" alt="Drinking water filter" /></td>
<td>Drinking water filter</td>
</tr>
</tbody>
</table>

## 5.2 Electrical symbols

### Actuators

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="symbol" alt="General actuator (pump / control valve / mixing valve / connection)" /></td>
<td>General actuator (pump / control valve / mixing valve / connection)</td>
</tr>
<tr>
<td><img src="symbol" alt="Servomotor (e.g. on the three-way mixing valve)" /></td>
<td>Servomotor (e.g. on the three-way mixing valve)</td>
</tr>
<tr>
<td><img src="symbol" alt="Motor (e.g. of a pump)" /></td>
<td>Motor (e.g. of a pump)</td>
</tr>
</tbody>
</table>

### Sensors

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="symbol" alt="General sensor (temperature sensor, volume flow encoder, etc.)" /></td>
<td>General sensor (temperature sensor, volume flow encoder, etc.)</td>
</tr>
<tr>
<td><img src="symbol" alt="Volume flow encoder" /></td>
<td>Volume flow encoder</td>
</tr>
<tr>
<td><img src="symbol" alt="Temperature sensor" /></td>
<td>Temperature sensor</td>
</tr>
</tbody>
</table>

### Other electrical components

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="symbol" alt="Jumper" /></td>
<td>Jumper</td>
</tr>
<tr>
<td><img src="symbol" alt="On/off switch (button with lock function)" /></td>
<td>On/off switch (button with lock function)</td>
</tr>
<tr>
<td><img src="symbol" alt="Automatic firing system" /></td>
<td>Automatic firing system</td>
</tr>
<tr>
<td><img src="symbol" alt="Lightning protection box" /></td>
<td>Lightning protection box</td>
</tr>
<tr>
<td><img src="symbol" alt="Room control element" /></td>
<td>Room control element</td>
</tr>
<tr>
<td><img src="symbol" alt="Terminal S3 at output A12" /></td>
<td>Terminal S3 at output A12</td>
</tr>
</tbody>
</table>
Notes