

Stratified Layering Module SLM 120-S/200-S

Manual



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2. Description

The Stratified Layer Module connects large scale solar thermal collector installations to large scale buffer tanks. Solar heat is transferred with highly efficient heat exchangers into the buffer system. An intelligent control system takes care of the optimal cooperation of solar and charge pump and ensures high heat transfer rates. On the buffer side the Stratified Layer Module charges the corresponding temperature zone of the buffer tank RPM-regulated and temperature dependent.

3. Warning notices



Installation and operation must be performed according to regional regulations and common practice.

Installation, maintenance and cleaning must be conducted by a qualified professional.

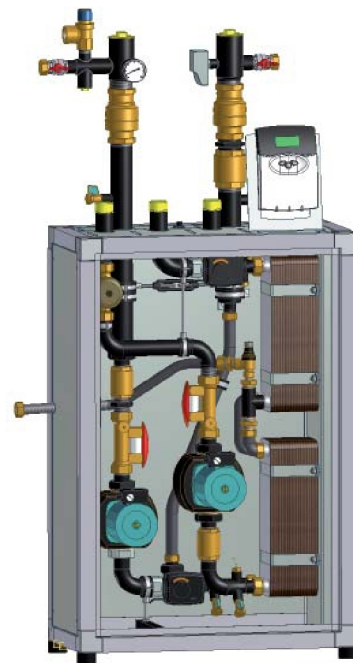
Any unauthorized alteration or change is forbidden due to security reasons and inevitably leads to the loss of any guarantee.

The max. operating pressures must not be exceeded!

At the occurrence of malfunctions – regardless of nature – please contact your installer for heating systems. Please do not perform any unauthorized repairing, it is forbidden and can lead to unexpected dangers.

4. Design of the Stratified Layer Module

The depicted picture is symbolic and can marginally differ from your Stratified Layer Module.



5. Safety precautions



The assembly, maintenance and cleaning must only be accomplished by qualified technical professionals. The installation and operation must be performed according to regional regulations and laws, common practice and according to the directives of the local water utility.

- **DIN 1988**
Drinking water supply systems
- **DIN 4708**
Central heat- water-installations; terms and calculation-basis
- **DIN EN 12828**
Heating systems in buildings - design of water-based heating systems
- **DIN 4753**
Water heaters and water heating installations for drinking water and service water
- **DIN 4757**
Solar heating plants operating on organic heat transfer media; requirements relating to safe design and construction
- **DIN 18380**
German construction contract procedures - Systems for heating and central water heating
- **DIN 18381**
German construction contract procedures - Gas, water and sewage plumbing works inside of buildings
- **DIN 18382**
Contract procedures for buildings works - low-voltage installation and medium-voltage installation with nominal voltages up to including 36 kV
- **DIN EN 12975**
Thermal solar systems and their components
- **VDE 0100**
Low-voltages electrical installations
- **VDE 0185**
Lightning protection components (LPC)
- **VDE 0190**
Main equipotential bonding of electrical systems
- **ÖNORM EN ISO 9488**
Solar energy – vocabulary (ISO 9488:1999)
- **ÖNORM ENV 12977-1**
Thermal solar systems and components - custom built systems - part 1: general requirements
- **ÖNORM M7700**
Solar energy - terms with definitions
- **ÖNORM M7701**
Solar energy installations; approximate calculation method for the dimensioning of flat collectors in domestic hot water systems
- **ÖNORM M7731**
Solar heating systems for heating of water - requirements and tests

6. Installation and initiation

Before you install your Stratified Layer Module, please pay attention to the following points:

- Read all chapters and especially the warning notices.
- The operation of this device is not allowed to persons (including children) with limited physical, sensory or intellectual abilities.
- Uninformed or unacquainted persons may operate the device only under the supervision or at the trained person's disposition.
- Installation and operation must be performed according to regional regulations and laws.
- The max. operating pressures must not be exceeded!

6.1 Installation

The setting up and installation must be carried out by an approved professional crafts enterprise. It is also responsible for a proper installation and initiation. As a location for installation the device requires a frost-free room which has enough room for maintenance. The Stratified Layer Module needs to be installed splash-proof and may only be operated at room temperatures under 40°C.

6.2 Positioning of Stratified Layer Module

To avoid thermal losses install the Stratified Layer Module close to the buffer tank. Before installation, make sure that the floor has an adequate bearing strength and is flat. Adjustable feet are mounted for leveling.

6.3 Hydraulic connection

Installation of the piping has to follow the instructions on the labeling or the figure in the manual, respectively. The piping to the buffer tanks ought to be as short as possible! We suggest the use of steel or copper piping. With all pipes and fittings, take care of the installation sequence to avoid electrochemical corrosion. It is not allowed to install the device in gravitational heating systems!

The installation of the expansion vessel in the solar collector circuit must be a direct connection. The installation of shut-off valves (except dedicated maintenance devices like cap valves) is prohibited!

Tighten the flat-sealing connections only after sealing the piping. Avoid tightening torque and force effects on already installed parts and connections of the device at all costs!

Caution!

Additionally, check the tightening torques of the flat-sealing swivel nuts (some loosening can happen during transport).

6.4 Electric connection

The internal wiring of the electric parts is factory-provided. The connection to the electricity network (230 V/AC, 50Hz) happens with the connected power cord. The included buffer tank sensors need to be installed according to their designation “Puffer oben“ (buffer tank top) and “Puffer unten” (buffer tank bottom) at the measuring points of the buffer tank. Similarly, the included solar collector sensor needs to be connected to the terminal of the controller. The included controller manual provides extensive information regarding the integrated controller.

Operations at the electrical parts of the device must be conducted according to regional regulations and laws.

6.5 Initiation

The initiation must be carried out by an approved professional crafts enterprise. During the initiation process the unproblematic operation and leak-tightness of the whole installation, including the preinstalled connections, has to be tested. The function of the safety relief valve has to be tested regularly. An annual service by a professional is recommended.

Slow opening of the ball valves at the entries and exits of the Stratified Layer Module avoids pressure blows during the rinsing process. Use the rinsing ports to fill the solar collector circuit.

The filling and rinsing of the system needs to be continued until it is sure that the system is completely de-aerated! Stream noises during operating the charge pump indicate that there is still air left in the system, which needs to be discharged over the pump and the manual bleeding device.

At the end of the filling process, close the collector return and regulate the system pressure to 3 bar (this is valid for expansion vessels with a preset pressure of 2,5 bar, please take the static height of the installation into account).

Caution!

Before working on the electrical parts of the Stratified Layer Module make sure to disconnect it from the electricity network!

Do not fill the system at high solar radiation because this can lead to steam hammering!

Initiation Procedure

Buffer circuit side:

- Slowly open the buffer flow and after that both buffer returns.
- Activate the secondary pump with the controller .
- At the occurrence of stream noises at the pump deaerate it with the bleeding screws.
- Activate the switching valve for the buffer loading with the controller (outlet A) and deaerate both connections.
- Deaerate the buffer tank after initiation and refill buffer water, if necessary .
- Adjust Tacosetter.

Solar collector circuit side:

- Fill and rinse the solar collector circuit with a filling pump.
- The solar collectors and the Stratified Layer Module need to be rinsed separately.
- The filling and rinsing of the system needs to be continued until it is sure that the system is completely de-aerated.
- Adjust Tacosetter according to collector size and operation.

NOTE

Before filling the SLM or the FWM all pipe work connected to the appliances must be flushed and cleansed free of any debris using an appropriate non corrosive chemical cleaning substance.

The buffer tanks and primary pipe work must be filled before the filling of the solar circuit. The tanks must be flushed and cleansed prior to filling. When filling, a suitable corrosion protection inhibitor must be introduced to the system in the correct dosage as stated by the manufacturer.

The buffer tank sealed circuit must be filled using a pressurisation unit if the heat input exceeds 45kW according to WRAS Guidance G 24.2.

The solar circuit, once flushed, must be filled with the correct dosage of solar heat transfer fluid to protect the system from extreme low temperatures.

7. Technical data

		SLM120	SLM200
Dimensions	Width	825 mm	
	Height	1710 mm	
	Depth	415 mm	
Casing		Galvanized sheet steel incl. 20 mm insulation	
Piping solar		2", coated steel	
Piping buffer		6/4", coated steel	
Weight		85 kg	95 kg

Connections	A	Upper buffer charger (hot), 6/4" IT
	B	Lower buffer charger (warm), 6/4" IT
	C	Return from buffer tank, 6/4" IT
	D	Solar flow (from collector), 2" IT
	E	Solar return (to collector), 2" IT
	F	Expansion vessel solar, 1" IT
	G	Exhaust line safety relief valve, 5/4" IT
	H	Exhaust line safety relief valve, 1" flat-sealing

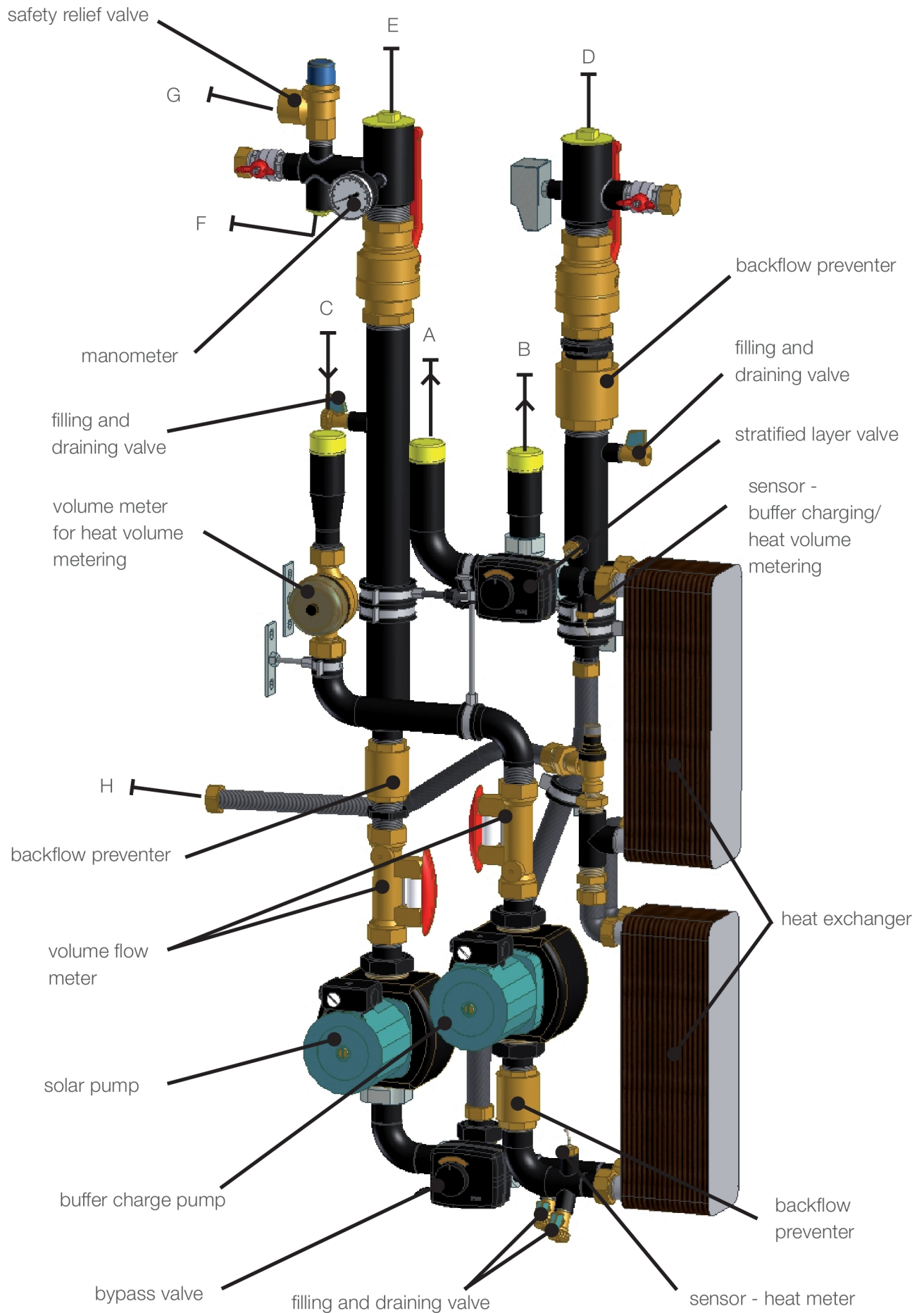
Spread prim. / sec. (6K)	60°C - 35°C	29°C - 54°C
Flow rate prim. / sec. (6K)	0,663 / 0,575 kg/s	1,106 / 0,958 kg/s
Pressure loss prim. / sec. (6K)	26 kPa	22 kPa
Heat exchanger transfer capacity	60 kW	100 kW

Solar pump	Nominal voltage	230 V / 50 Hz
	Power input	0,4 kW
	Max. current	2,02 A
	Rated speed	2600 RPM
	Max. delivery head	113 kPa
Buffer charge pump	Nominal voltage	230 V / 50 Hz
	Power input	0,177 kW
	Max. current	0,85 A
	Rated speed	2660 RPM
	Max. delivery head	39 kPa

Components	Antifreeze thermostat 35 °C
	Flow volume meter 20 - 70 l/min
	Heat meter 2,5 m ³ /h
	Back flow preventer (flow/return) 5/4"
	Safety relief valve 6 bar, 1" - 5/4"
	Manometer 0 - 10 bar
	3-circuit-solar controller, 1 outlet, incl. Sensors

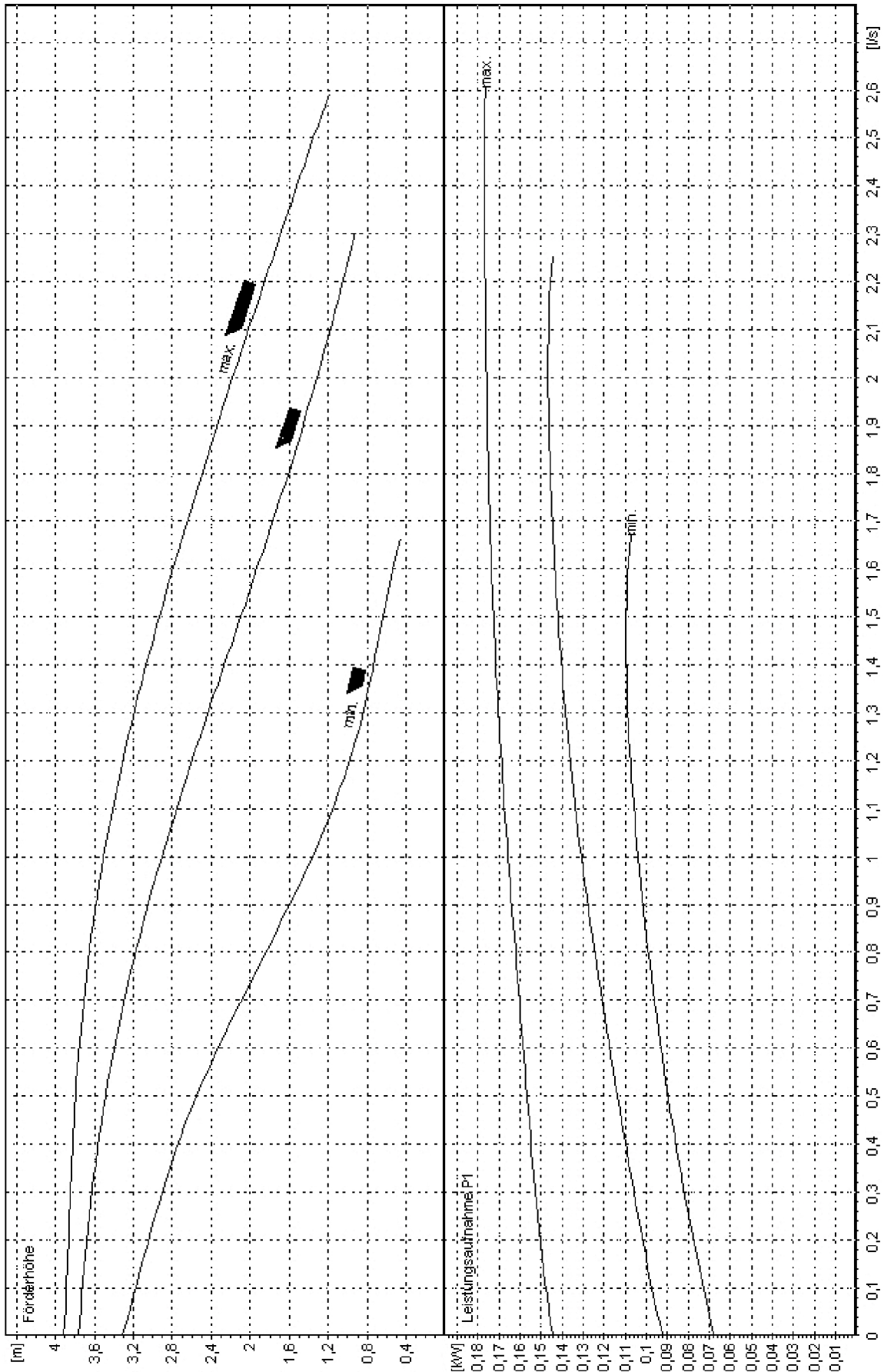
Operating temperature (min. allowable)	2° C
Operating temperature (max. allowable)	95° C
Operating pressure (max. allowable)	Solar 6 bar / Heating 3 bar

7.1 Design of Stratified Layer Module

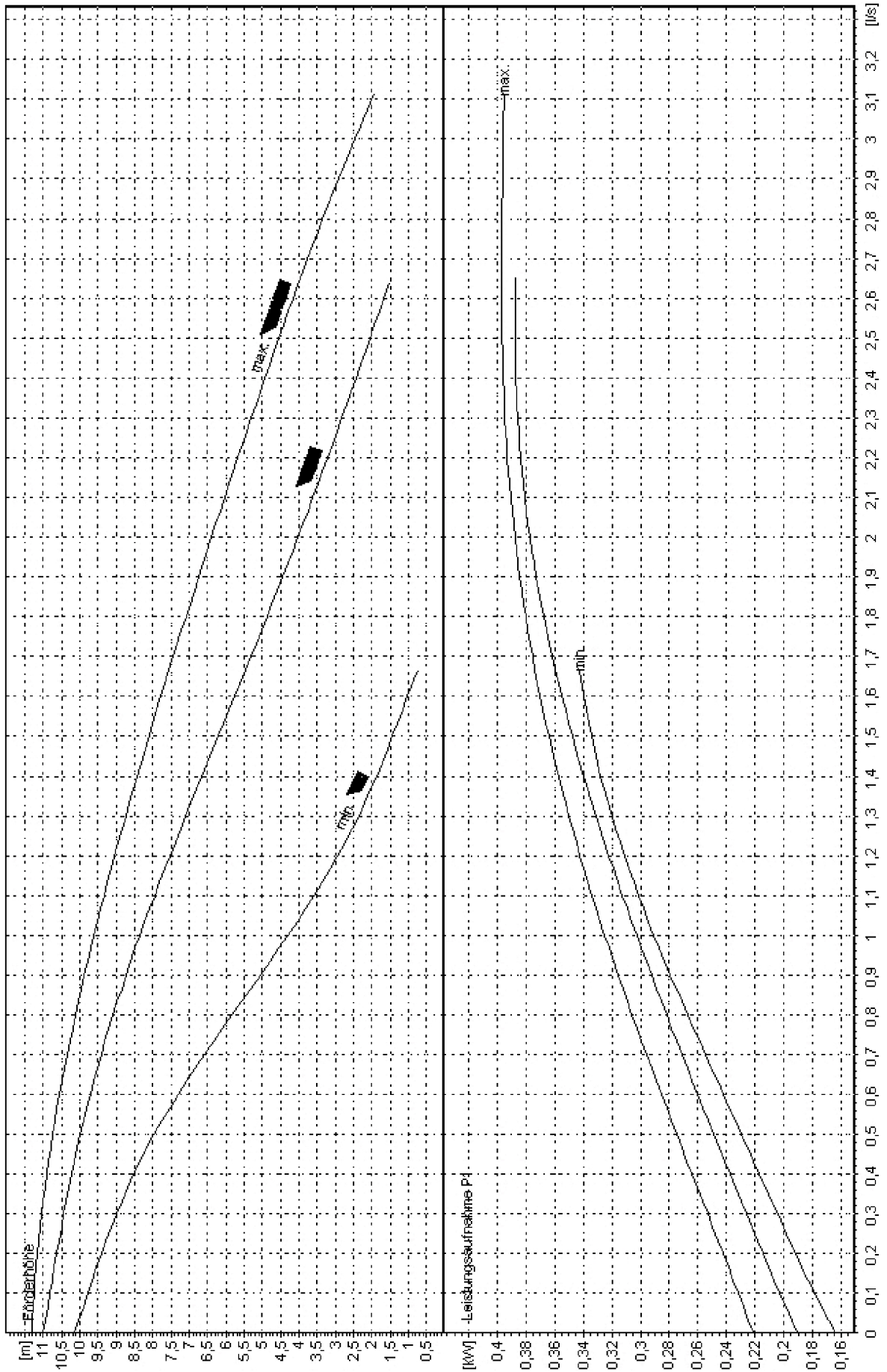


7.2 Pump characteristic lines

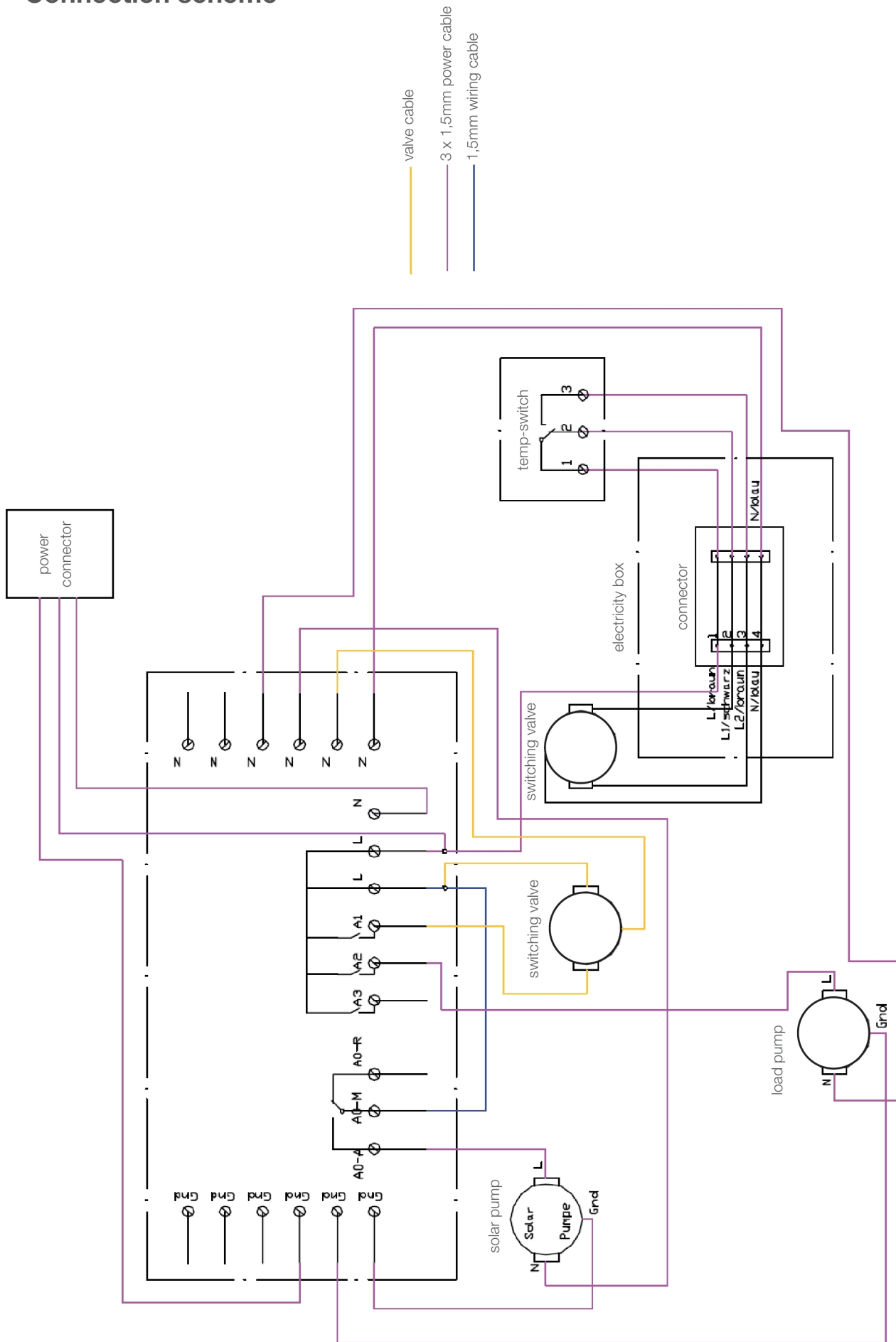
TOP-S 30/4 for water



TOP-S 30/4 for water



7.3 Connection scheme



8. Terms of guarantee

The manufacturer issues a guarantee of 2 years from the invoice date on the device and its constituent parts. Without proper installation and use of the device the guarantee is void.

Any unauthorized alteration or change is forbidden due to security reasons and inevitably leads to the loss of any guarantee.

Notes

Contact