froling

S1 / S4 / SP Dual

Hydraulic schematics

S1 Turbo
S4 Turbo
SP Dual

Valued Froling Partner

Here at Froling we want to provide the environmentally friendly, economical and userfriendly energy system solutions that people want.

This brochure presents our range and offers orientation for planning or implementation of heating systems, and contains the most current variants.

We reserve the right to make technical changes without prior notice.

If you need more information or suggestions for hydraulic systems, our customer service department, and of course our internal technical department, will always bei happy to assist.

Froling G.m.b.H

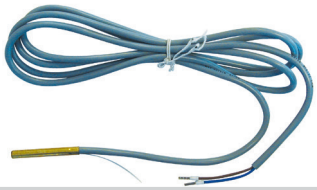
Contents

The following pages provide a general description of the most important components and sensor functions used in the systems.

! Due to the wide range of programming options with the Lambdatronic S 3200, the sensor descriptions may vary for specific systems that have been adapted for customers.

1) Sensors

1.1) General sensors

Immersion sensor	Collector sensor
e.g. as boiler-, DHW tank- or store-sensor	for solar systems
	
Contact sensor	**External sensor**
e.g. as return feed sensor or outfeed sensor	for weather-activated heating circuit control
	

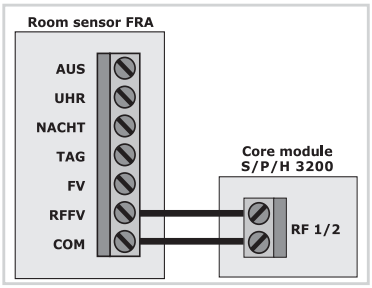
Technical specifications for the sensors listed above:

Resistance sensor type:	**KVT 20**; approx. 2kΩ at 20°C
Maximum cable length:	**40m** with shielded cable in the same building

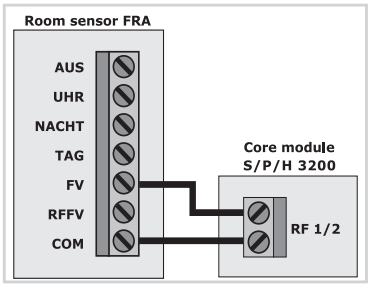
1.2) Room sensor FRA

Analogue room sensor (disengageable) with selector switch mode and adjusting wheel for temperature.

Connection with influence of room temperature:



Connection without influence of room temperature



Technical specifictions:

Resistance sensor type:	**FRA**; approx. 3,5kΩ at 20°C (switch set to automatic mode and rotating wheel in middle position)
Maximum cable length:	**40m** with shielded cable in the same building

2) Bus system

2.1) Heating circuit module

Wall casing with board for controlling

- **2 mixers**
- **2 heating circuit pumps**
- **2 analogue room sensors**
- **Bus connection to main control**
- **max. 8 units can be used per system**

A contact sensor for controlling a heating circuit is included.

2.2) Hydraulic module

Wall casing with board for controlling

- **2 pumps, using max. 6 sensors**
- **max. 8 units can be used per system**
  (1 hydraulic module with 3 immersion sensors is included in boiler delivery)

Additionally 2 immersion sensors are included, which can be used for the following purposes:

- **Storage tank management**
  for speed-controlled storage tank loading via 2 sensors. Top store sensor releases heating circuit pumps.
- **Differential temperature control for DHW-tank**
  for controlling the DHW-tank loading pump; depending on the top storage tank temperature and DHW-tank temperature.
- **Solar systems and feeder pumps**
- **Circulation pump**

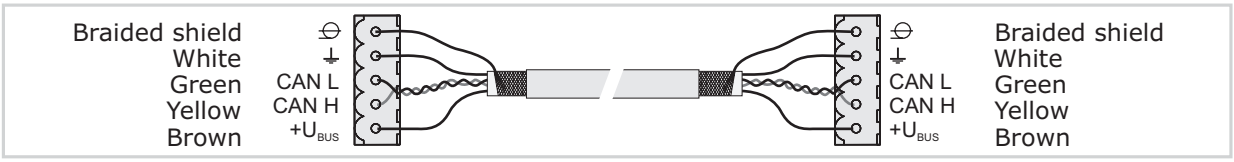
2.3) Room console RBG 3200 / RBG 3200 Touch

Digital multi-functional room device for easy operation of the heating system from the living area - for optimum room temperature and ease of use.
The latest data access using self-explanatory menu navigation.
Max. 7 units can be used per system.

2.4) Bus cable

- Maximum cable length: 500m
  (expandable with busrepeater / cascade module)
- Cable type LIYCY paired 2x2x0.5, CAT5 or CAT6 should be used for the bus connections between the individual modules (NOT TELEPHONE CABLE, such as type JY(ST)Y 2x2x0.6)

The connection to the 5-pin plugs should be carried out according to the following diagram:



3) Sensor functions for standard systems

3.1) Top store (sensor 0.1)

- Heating circuit release for the connected heating circuits (standard value: 30°C)
- Heat source for difference control of the DHW tank loading pump(s)
- Start signal for automatic ignition
- Release of a connected oil/gas boiler

3.2) Bottom store (sensor 0.2)

- Difference measurement of boiler sensor for pump switching conditions

3.3) DHW tank (sensor 0.3)

- Start signal for DHW tank loading pump
- Difference measurement of heat source (boiler or storage tank system-dependent)

3.4) Bottom DHW tank (sensor 0.4)

- Reference sensor for solar integration

3.5) Oil/gas boiler (sensor 0.5)

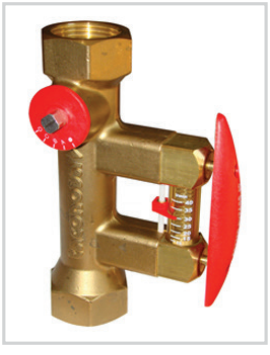
- Heating circuit release for oil/gas operation (system-dependent)
- Oil/gas boiler base temperature monitoring (switch valve / pump)

3.6) Mid store (sensor 0.6)

- Loading criterion of the pellets unit (SP Dual)

4) Balancing valve

If the systems are not correctly balanced there is normally an excessively high flow volume through the boiler. As a result there is a relatively low temperature difference between the boiler flow and return. The balancing valve SETTER Bypass SD, from the Froling product range enables precise and simple adjustment of the flow rate in l/min and thereby an optimal temperature difference.
There is only flow through the bypass if the handle is pressed. The volume flow rate in l/min can be set using the scale of the meter integrated to the bypass, reading from the lower edge of the floater. There is no need to spend time determining settings using diagrams and other aids.



4.1) Setting example

Log wood boiler S4 15kW, temperature difference 15K:

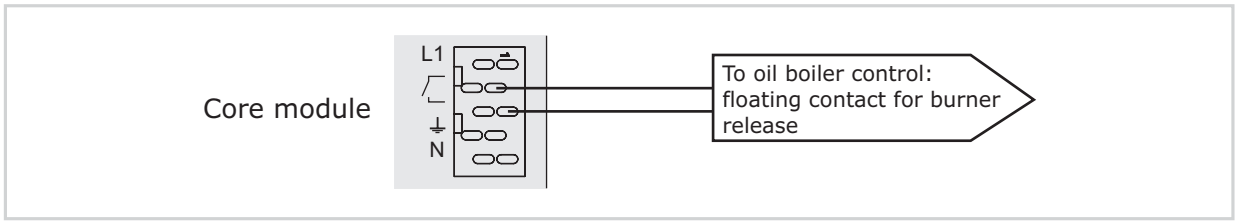
$$\dot{m} = \frac{Q_{Ges}}{c * \Delta T} = \frac{15\ kW}{1{,}163\ (kWh/m^3{*}K) * 15\ K}$$

$$\approx 0{,}86\ m^3/h = \underline{14{,}3\ l/min}$$

This means:
To get a temperature difference of 15K it is almost possible to set the output in kW as the volume flow rate in l/min at the balancing valve.

5) Connection instructions

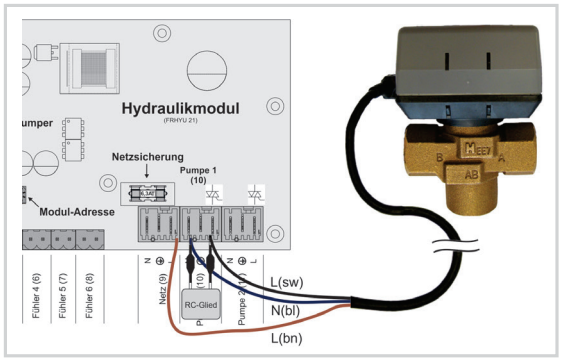
5.1) HKP0 - output for oil/gas boiler connections



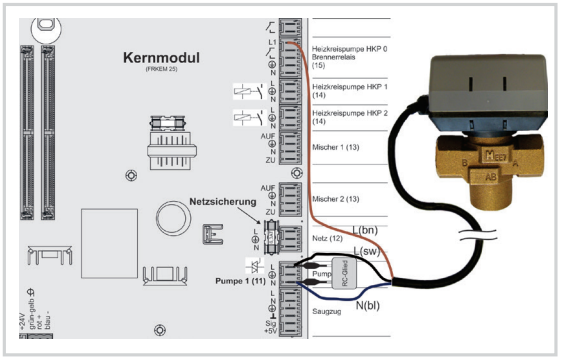
5.2) Isolating valve

If an isolating valve is connected to a speed-controlled pump outlet, an RC element must be used. Furthermore, the minimum speed for the pump outlet in use must be set to 100% in the control.

Connection hydraulic module:

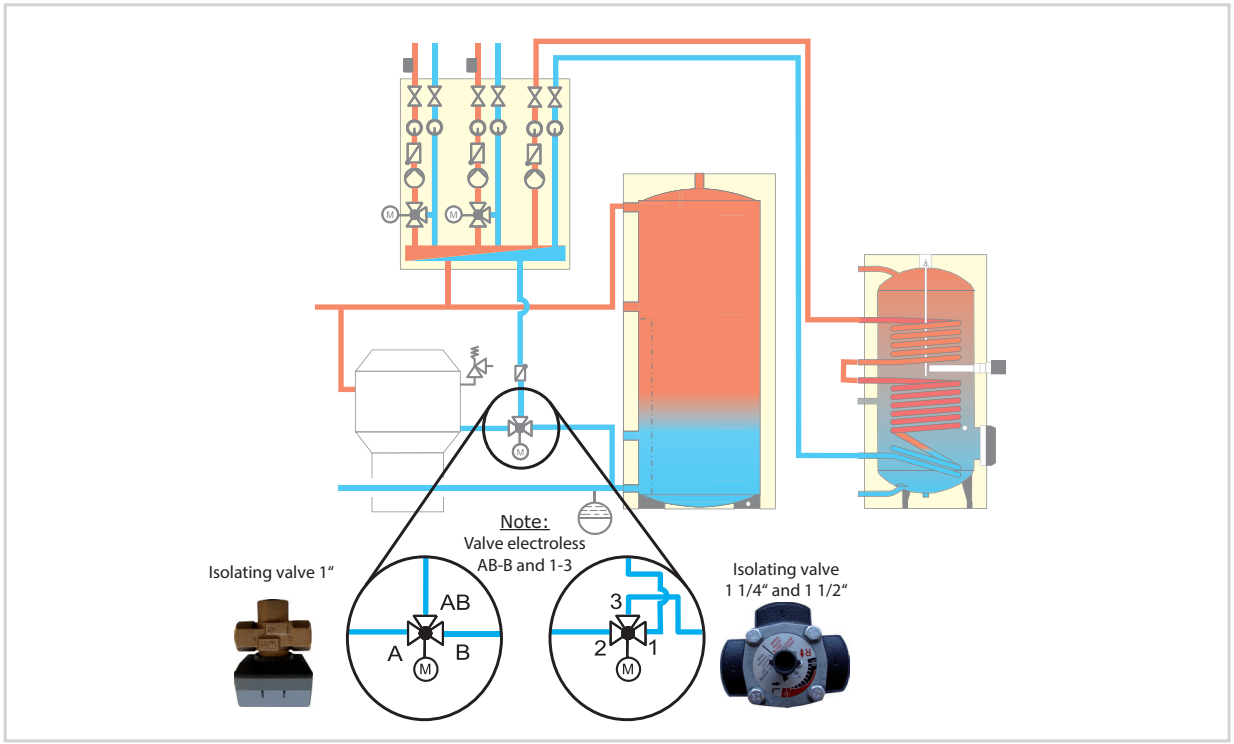


Connection core module:



Connect the outer cable L(bn):

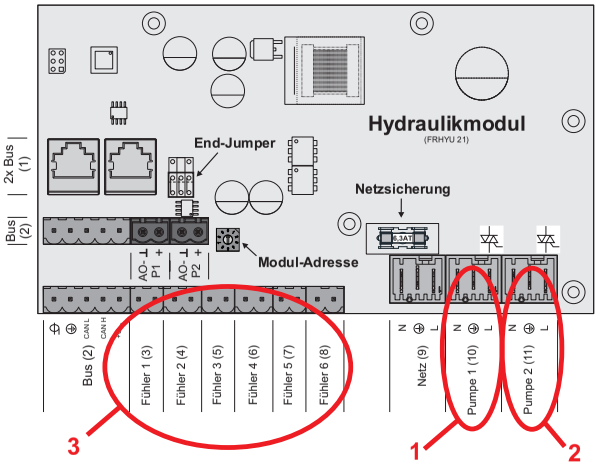
- to the outer cable of the respective mains supply of the module or
- to the core module, output HCP0/burner relay at pin "LV"



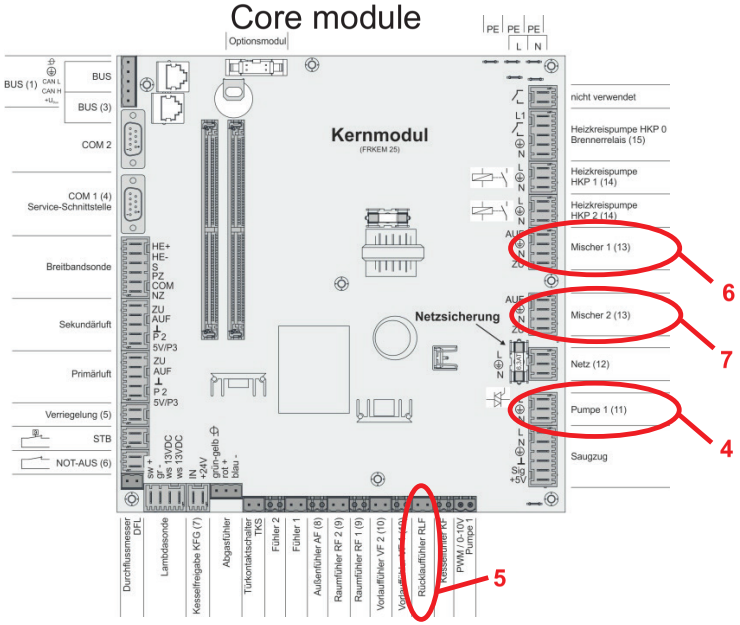
Suggested layout proposal!

Number	Name on connection board	Function	Connection board
1	Pumpe 1	Pump 0.1	Hydraulic module Adress 0
2	Pumpe 2	Pump 0.2	Hydraulic module Adress 0
3	Fühler 1 - 6	Temp.sensor 0.1 - 0.6	Hydraulic module Adress 0
4	Pumpe 1	Pump 1	Core module
5	Rücklaufföhler RLF	Return sensor	Core module
6	Mischer 1	Return feed m./Mixer1	Mixer 1 on Core module
7	Mischer 2	Mixer 2	Core module
8	Mischer 1/2	Mixer 3-18	on each heating circuit module (max. 2 heating circuits are available)

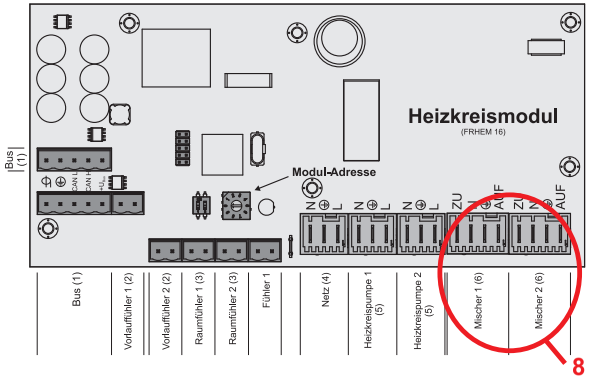
Hydraulic module



Core module



Heating circuit module



Note: Controller S3200; position numbers in brackets see operating instructions of the boiler controller

Suggested layout proposal!

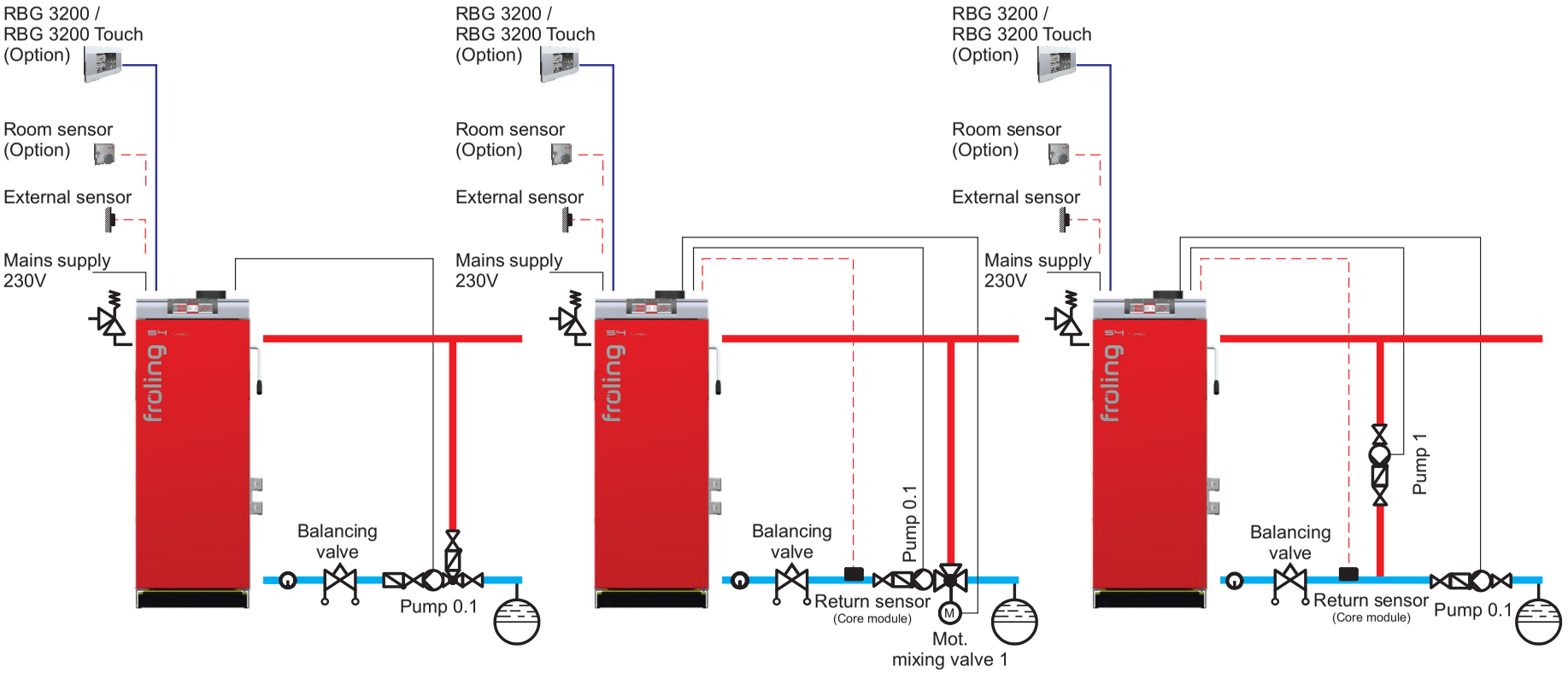
RLA - S/SP 3200

Possibilities for return feed lift

Note: With a return feed lift using pump assemby FE up to **18** heating circuits are available!

Note: With a return feed lift using a motorised mixing valve up to **17*** heating circuits are available!

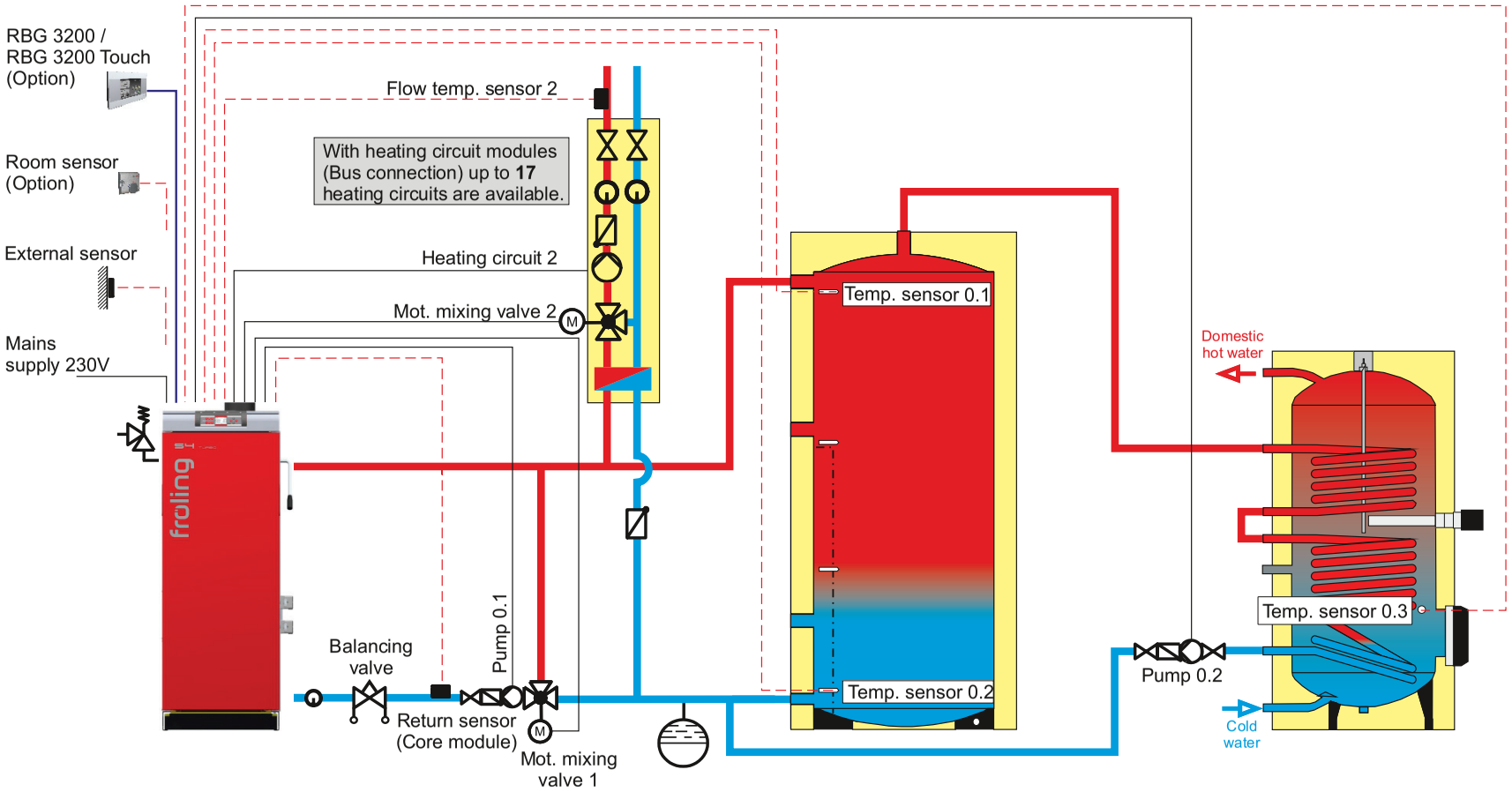
Note: With a return feed lift using pump assembly OE up to **18** heating circuits are available!



Note: Controller S 3200
* In combination with a return mixer module again up to 18 heating circuits are available!

Suggested layout proposal!

System 1.S013



Log wood/combination boiler
S1 Turbo / S4 Turbo / SP Dual

Layered tank

Pump assembly
OE

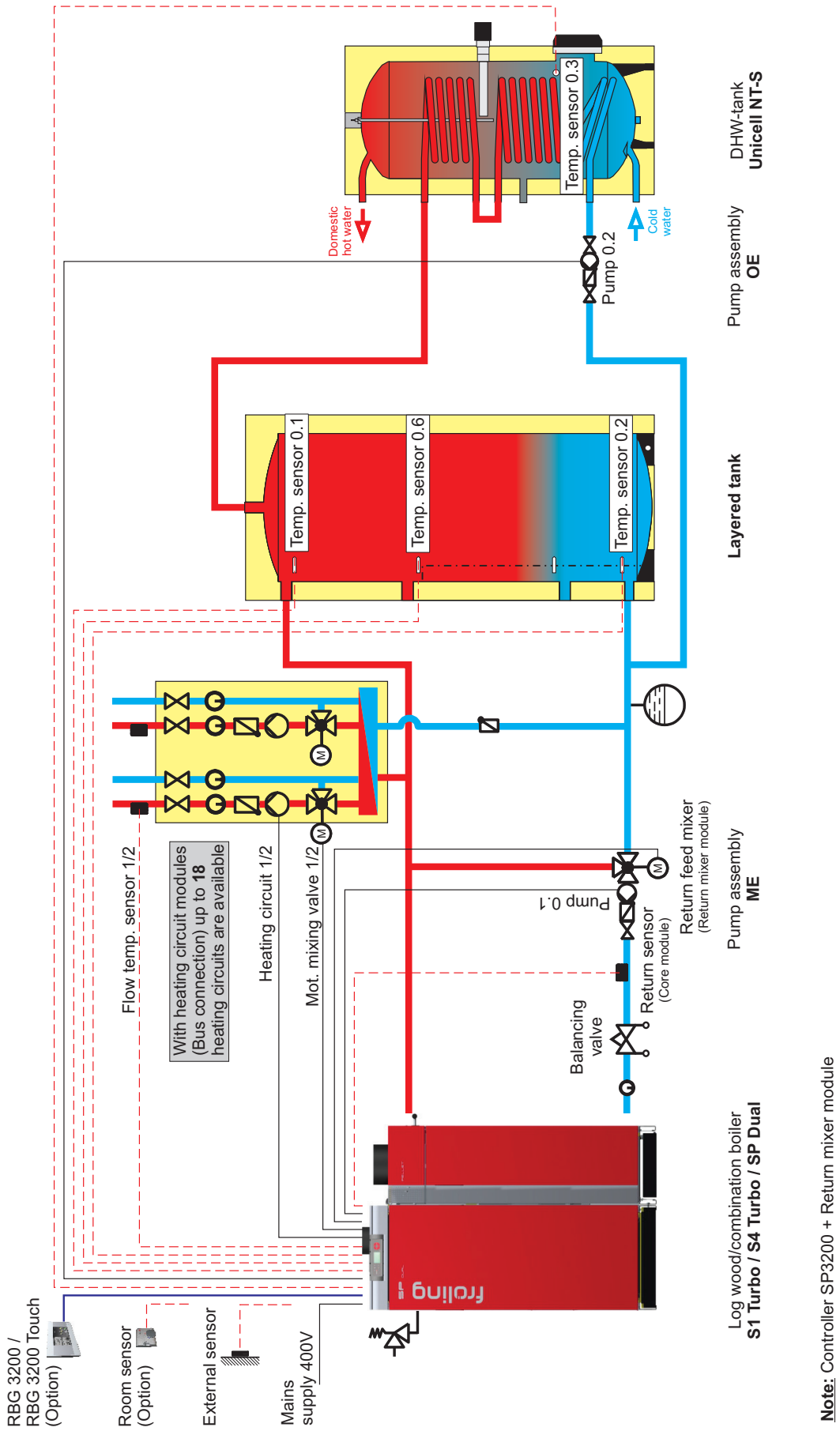
DHW tank
Unicell NT-S

Note: Controller S3200

Energy systems

System 1.SP003

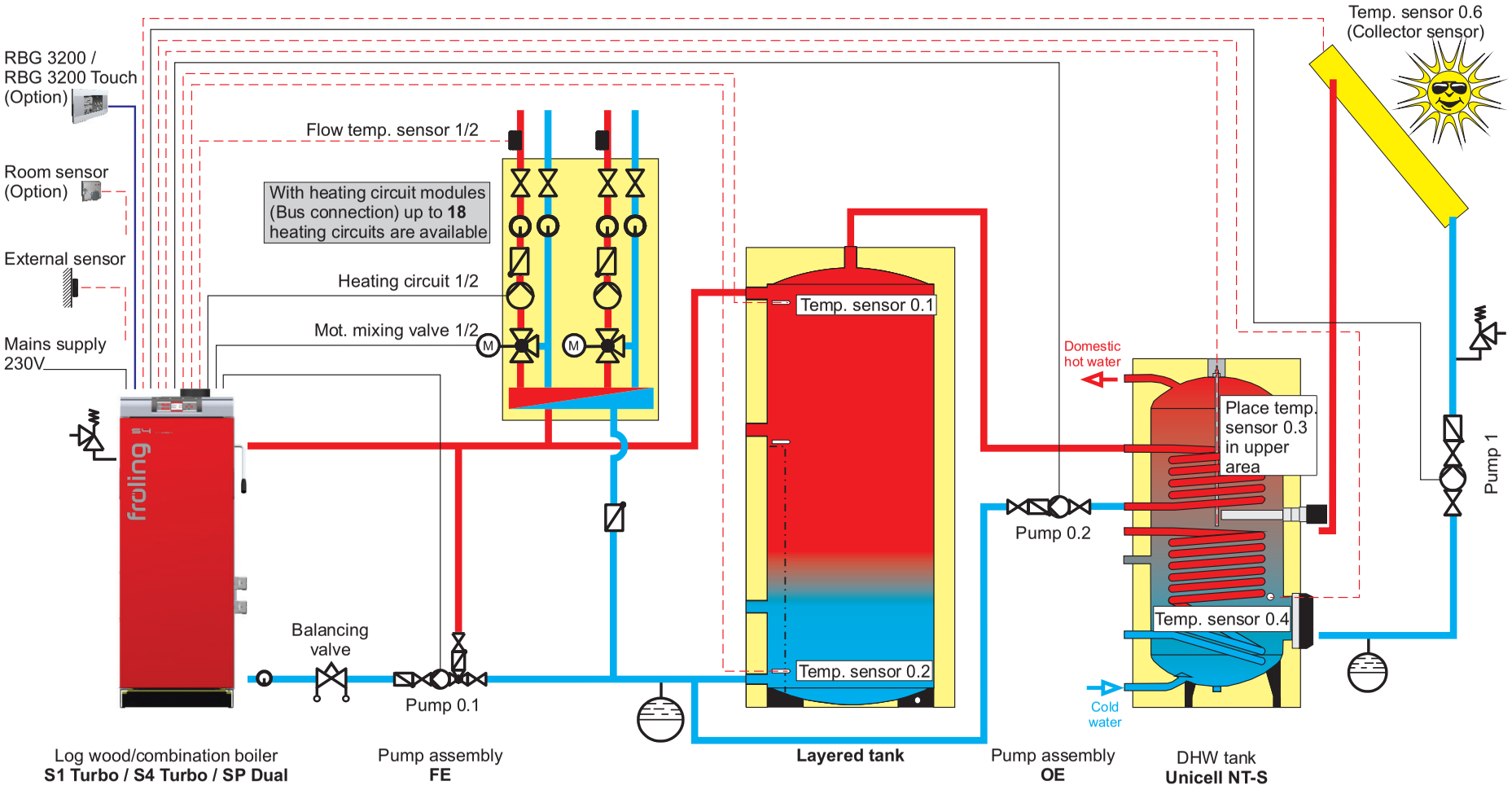
Suggested layout proposal!



Note: Controller SP3200 + Return mixer module

Suggested layout proposal!

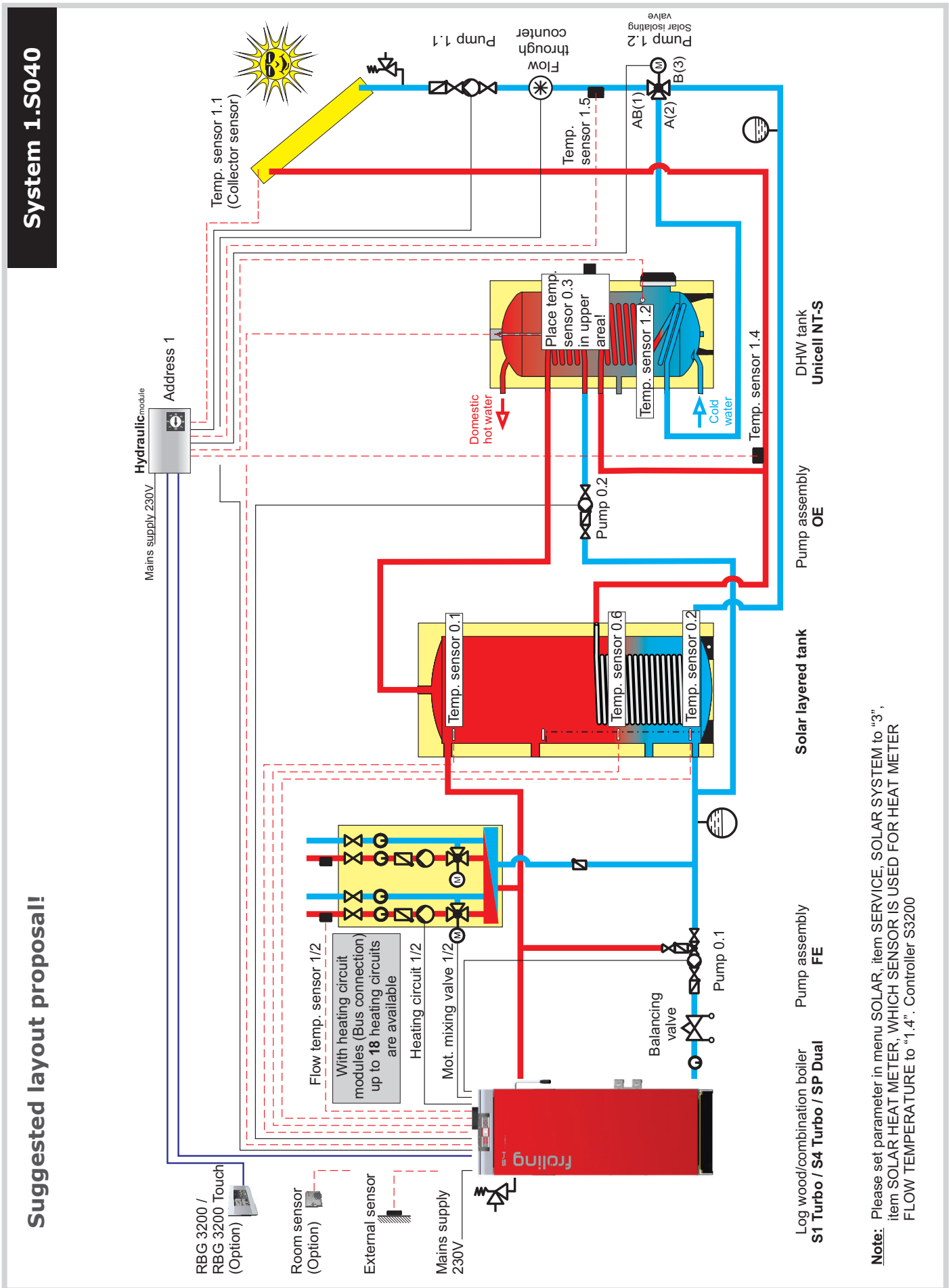
System 1.S002



Note: Please set parameter in menu SOLAR, item SERVICE, SOLAR SYSTEM to “1”,
WHICH SENSOR IS USED FOR THE SOLAR COLLECTOR to “0.6” and
WHICH PUMP IS USED FOR THE SOLAR COLLECTOR to “Pump 1”.
Controller S3200, since version 50.04 B04.08

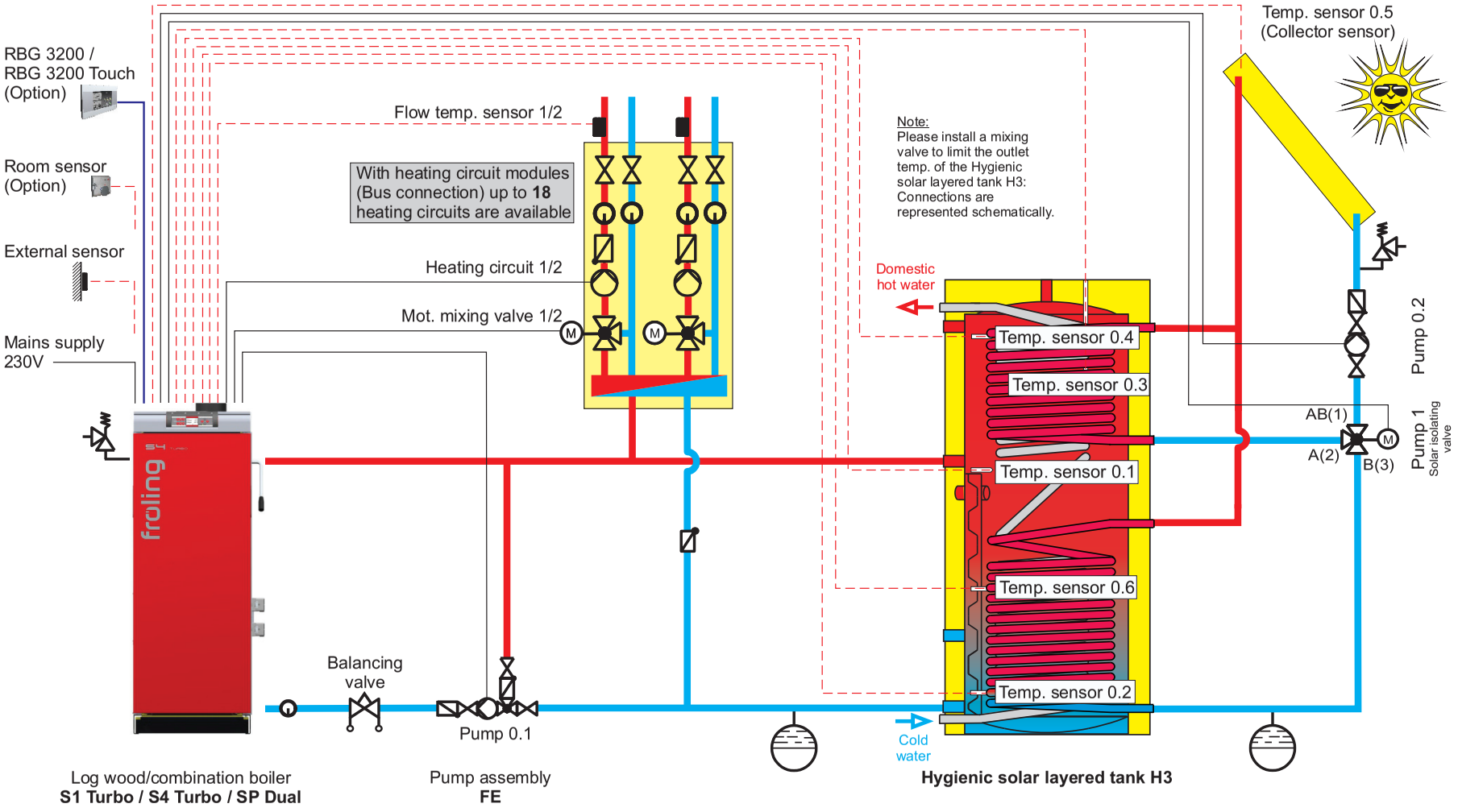
Energy systems

Layout proposals



Suggested layout proposal!

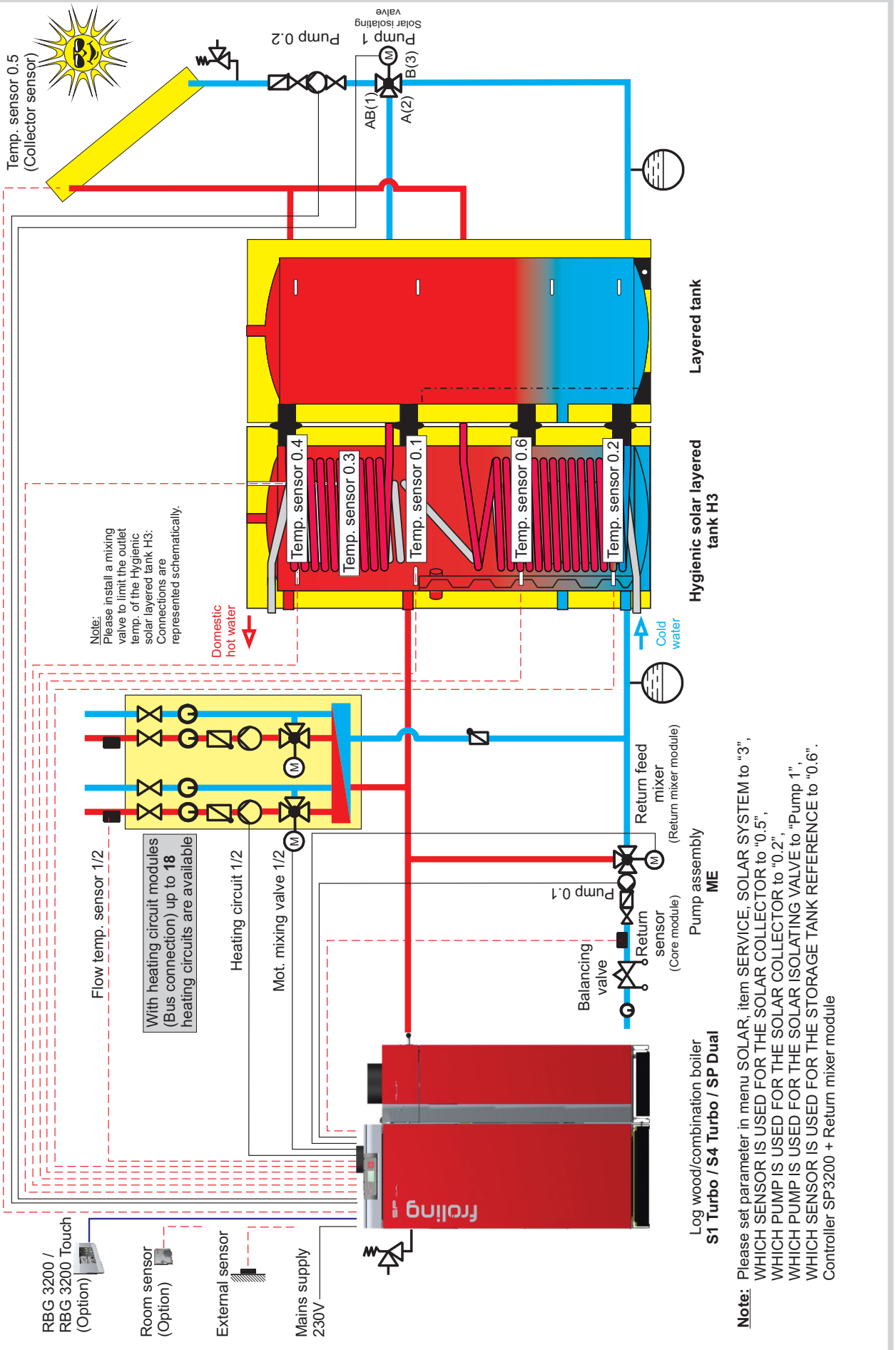
System 1.S007



Note: Please set parameter in menu SOLAR, item SERVICE, SOLAR SYSTEM to “3”,
WHICH SENSOR IS USED FOR THE SOLAR COLLECTOR to “0.5”,
WHICH PUMP IS USED FOR THE SOLAR COLLECTOR to “0.2”,
WHICH PUMP IS USED FOR THE SOLAR ISOLATING VALVE to “Pump 1”,
WHICH SENSOR IS USED FOR THE STORAGE TANK REFERENCE to “0.6”.
Controller S3200

System 1.SP001

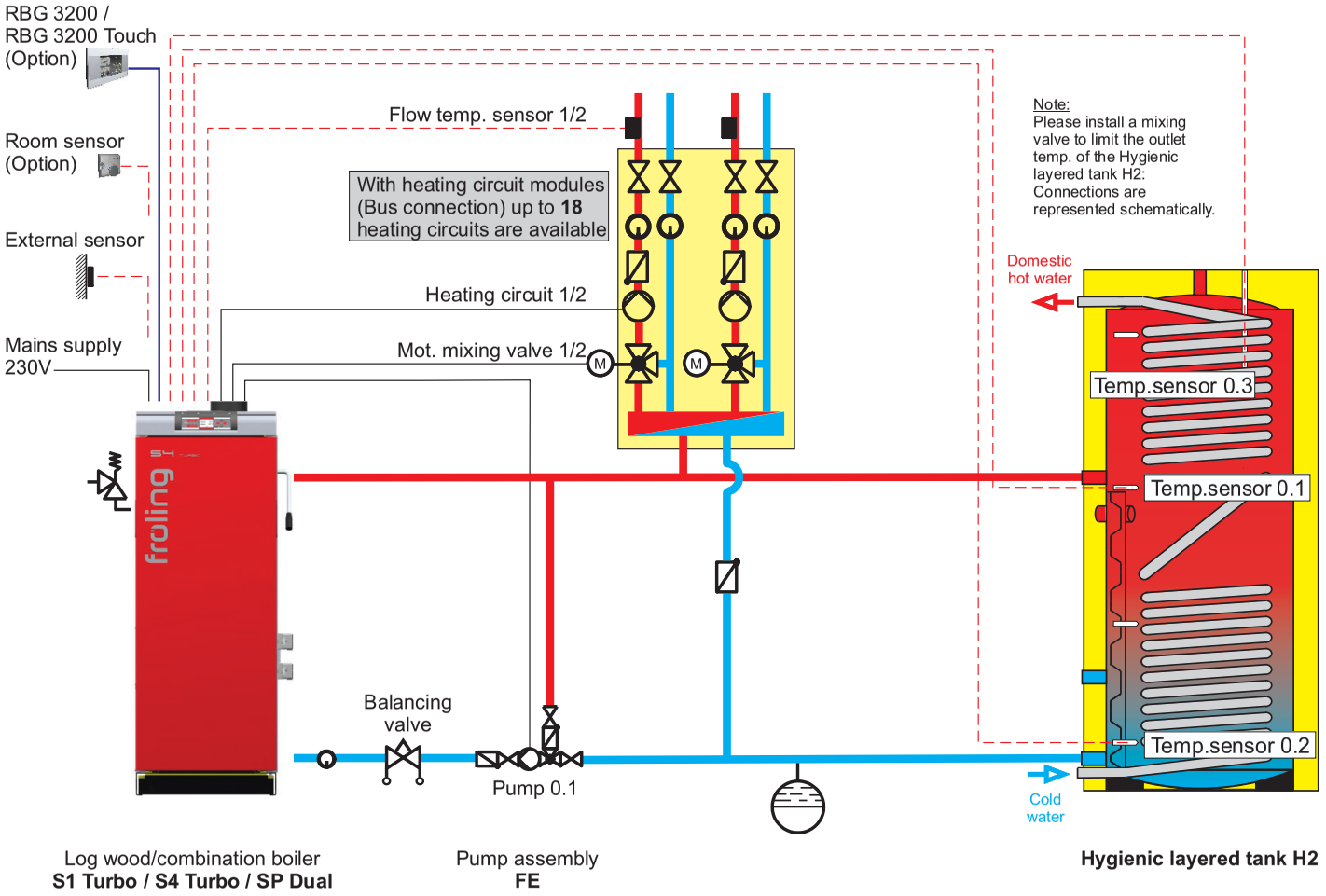
Suggested layout proposal!



Note: Please set parameter in menu SOLAR, item SERVICE, SOLAR SYSTEM to "3",
WHICH SENSOR IS USED FOR THE SOLAR COLLECTOR to "0.5",
WHICH PUMP IS USED FOR THE SOLAR COLLECTOR to "0.2",
WHICH PUMP IS USED FOR THE SOLAR ISOLATING VALVE to "Pump 1",
WHICH SENSOR IS USED FOR THE STORAGE TANK REFERENCE to "0.6".
Controller SP3200 + Return mixer module

Suggested layout proposal!

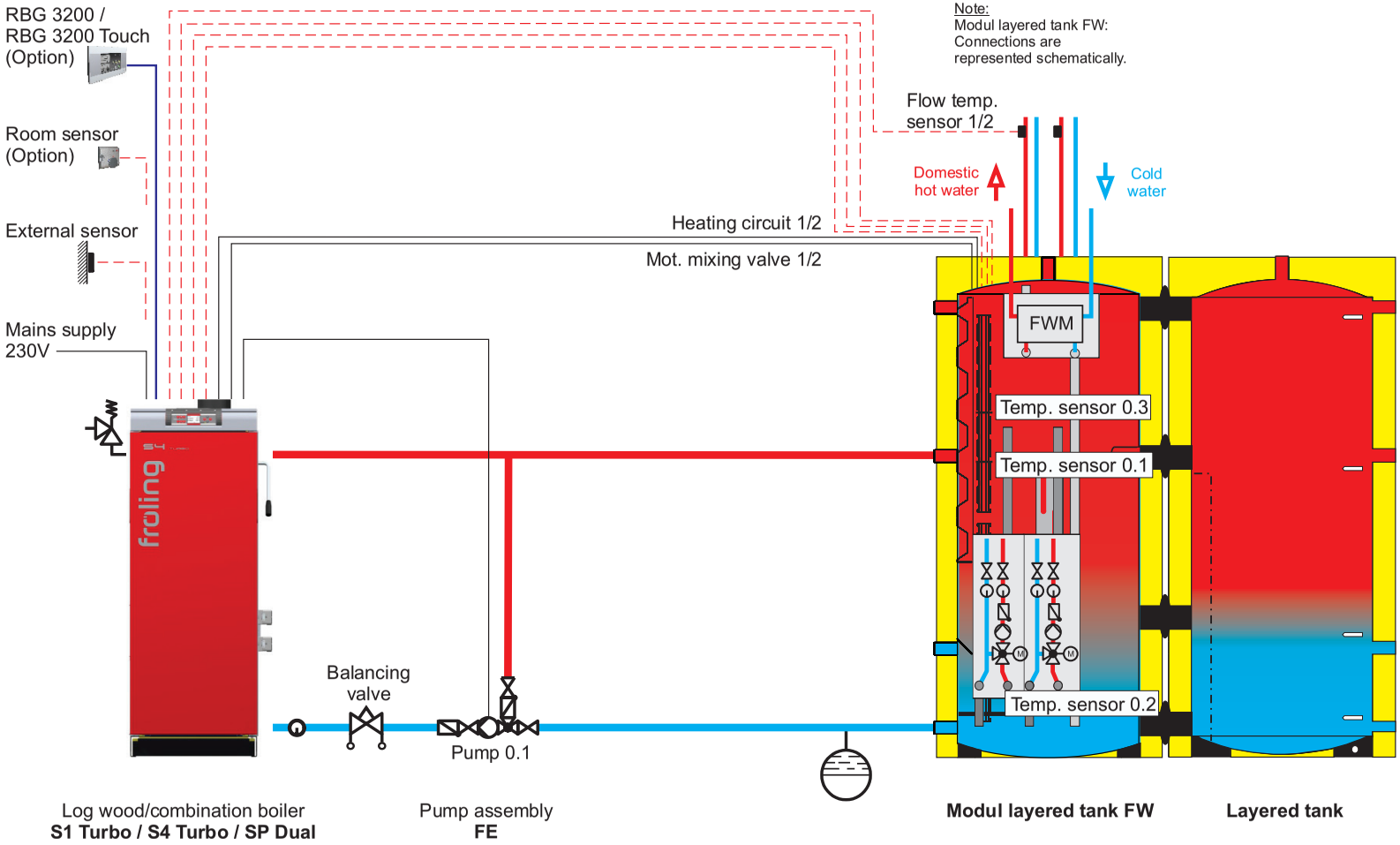
System 1.S008



Note: Controller S3200

Suggested layout proposal!

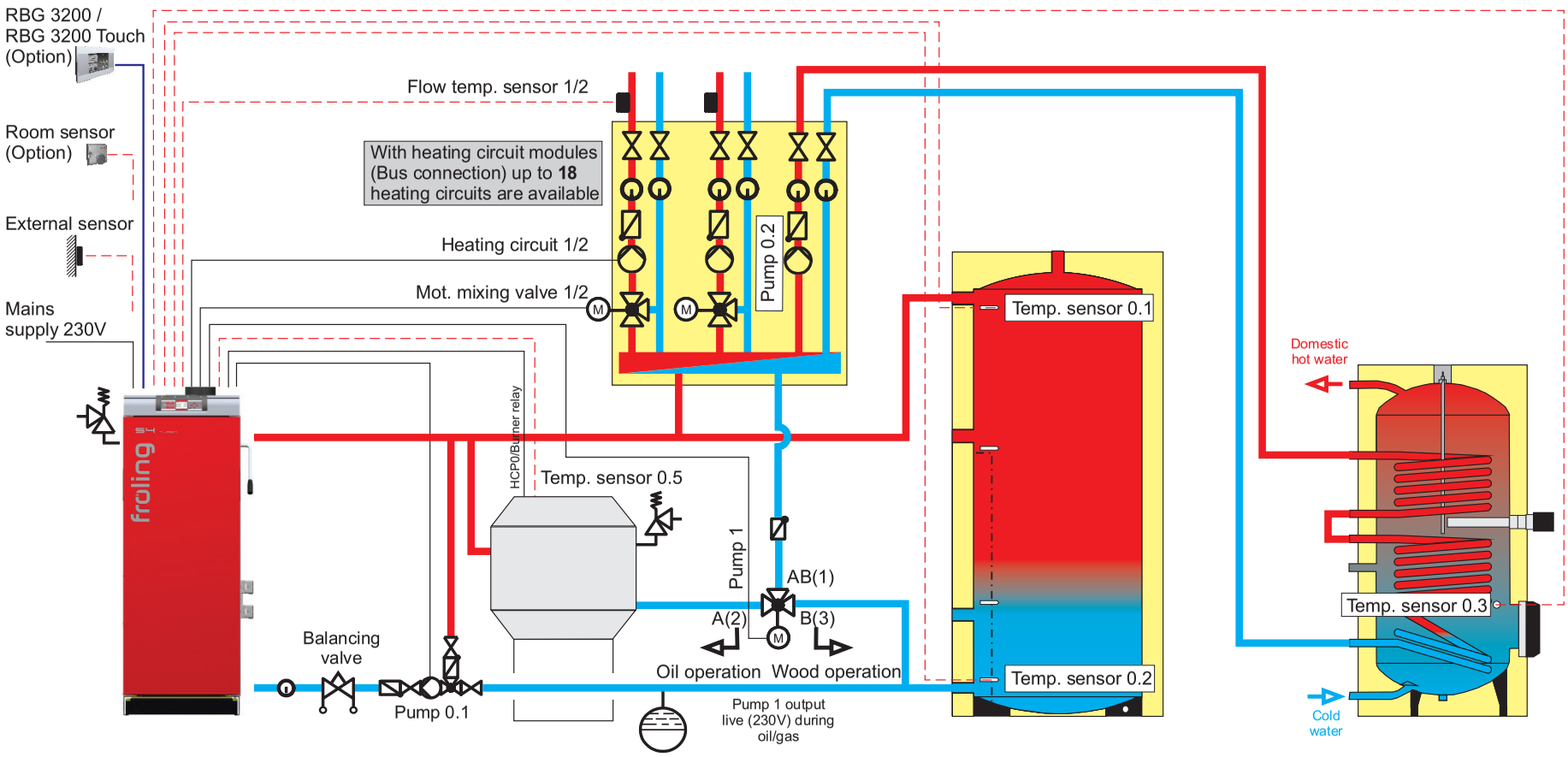
System 1.S035



Note: Controller S3200

Suggested layout proposal!

System 2.S001

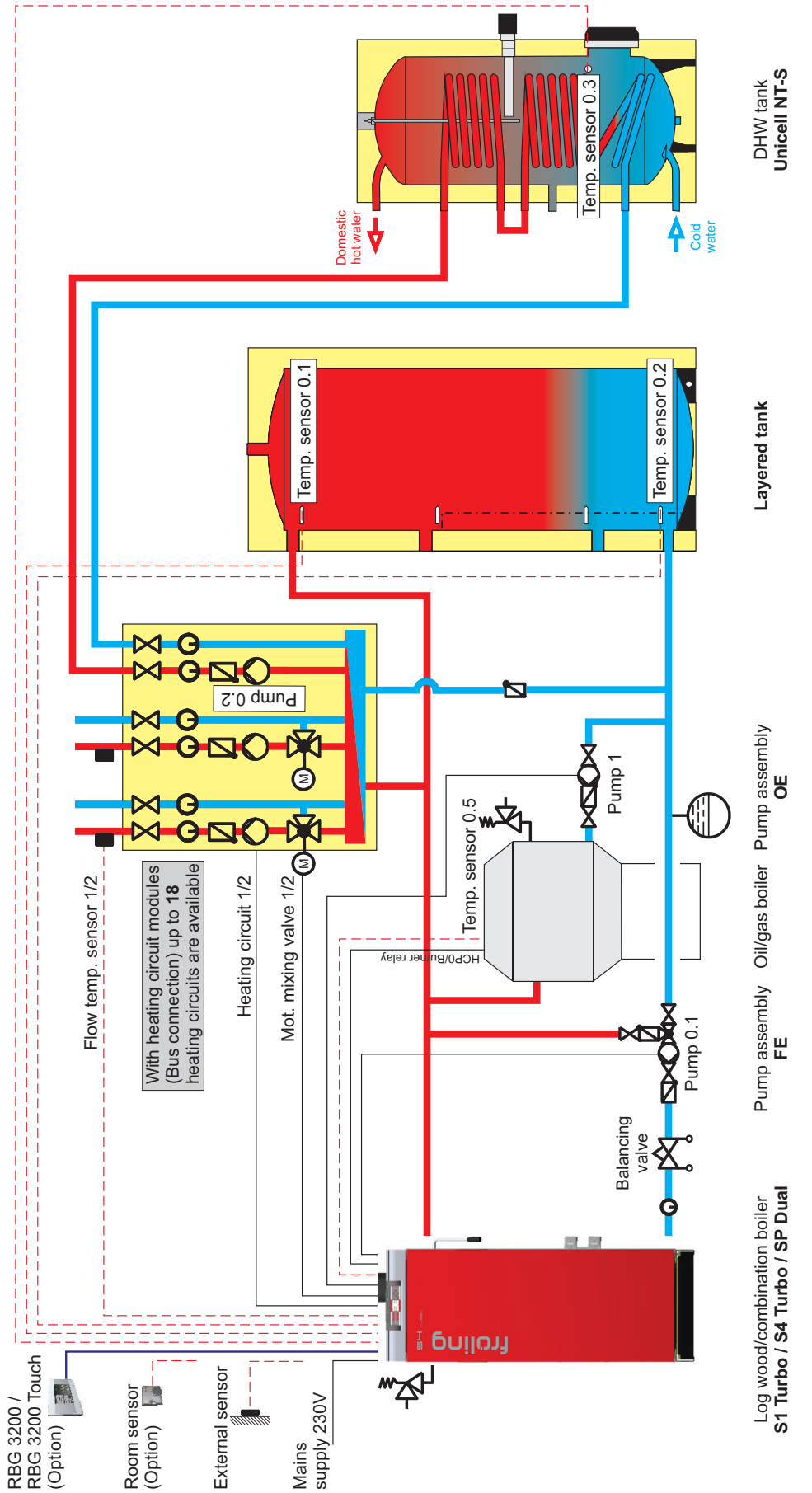


Note: Controller S 3200

Energy systems

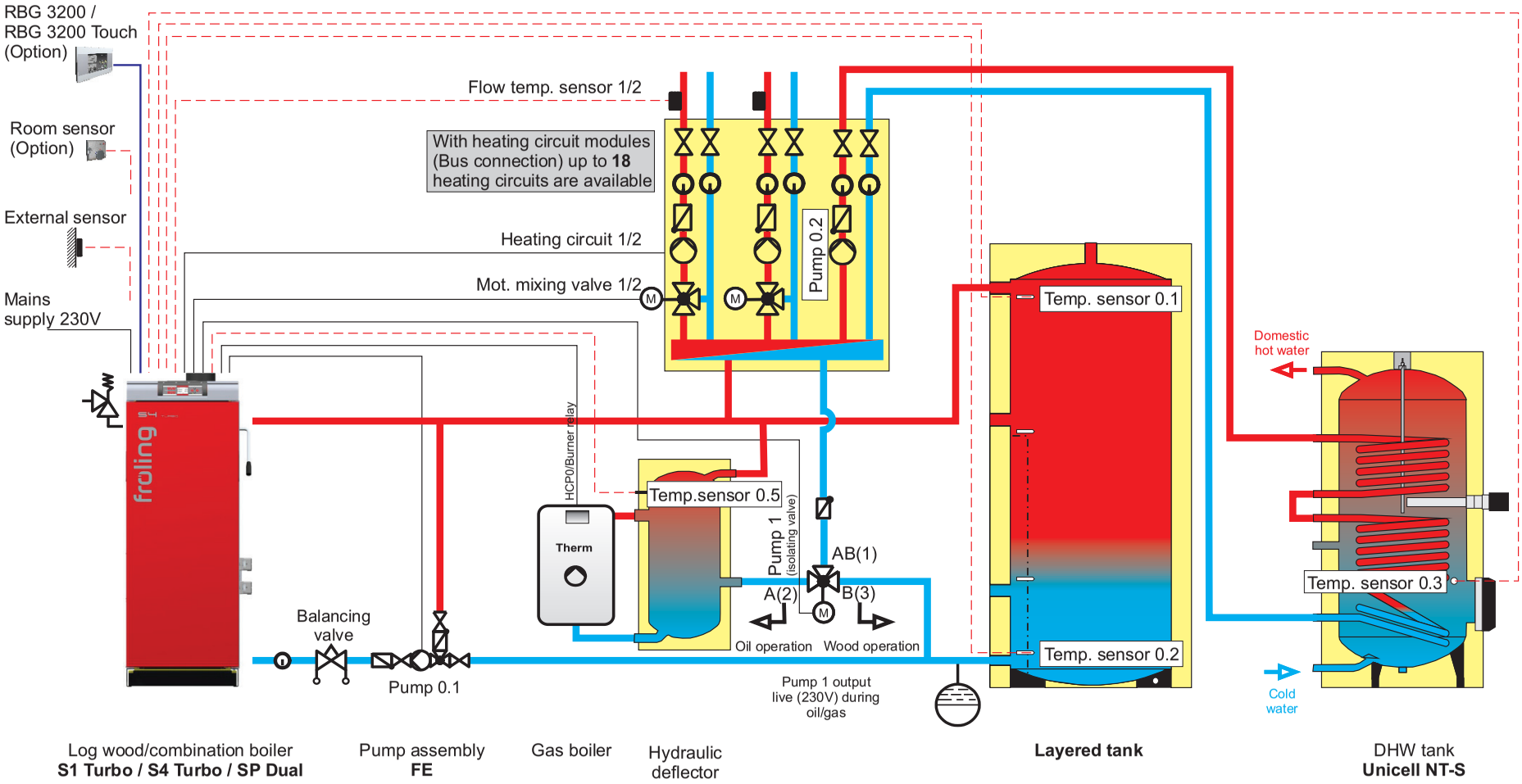
System 2.S021

Suggested layout proposal!

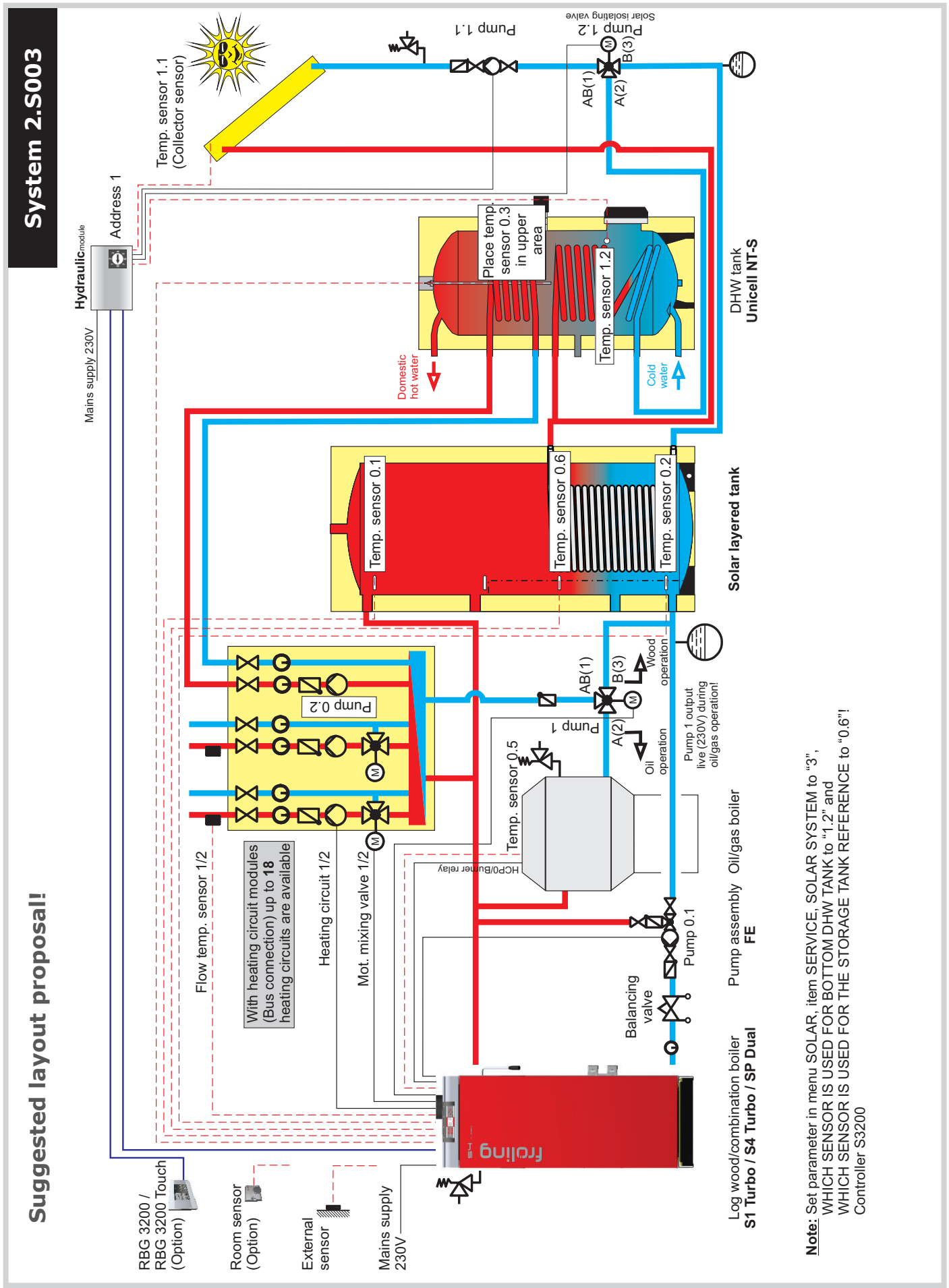


Suggested layout proposal!

System 2.S034



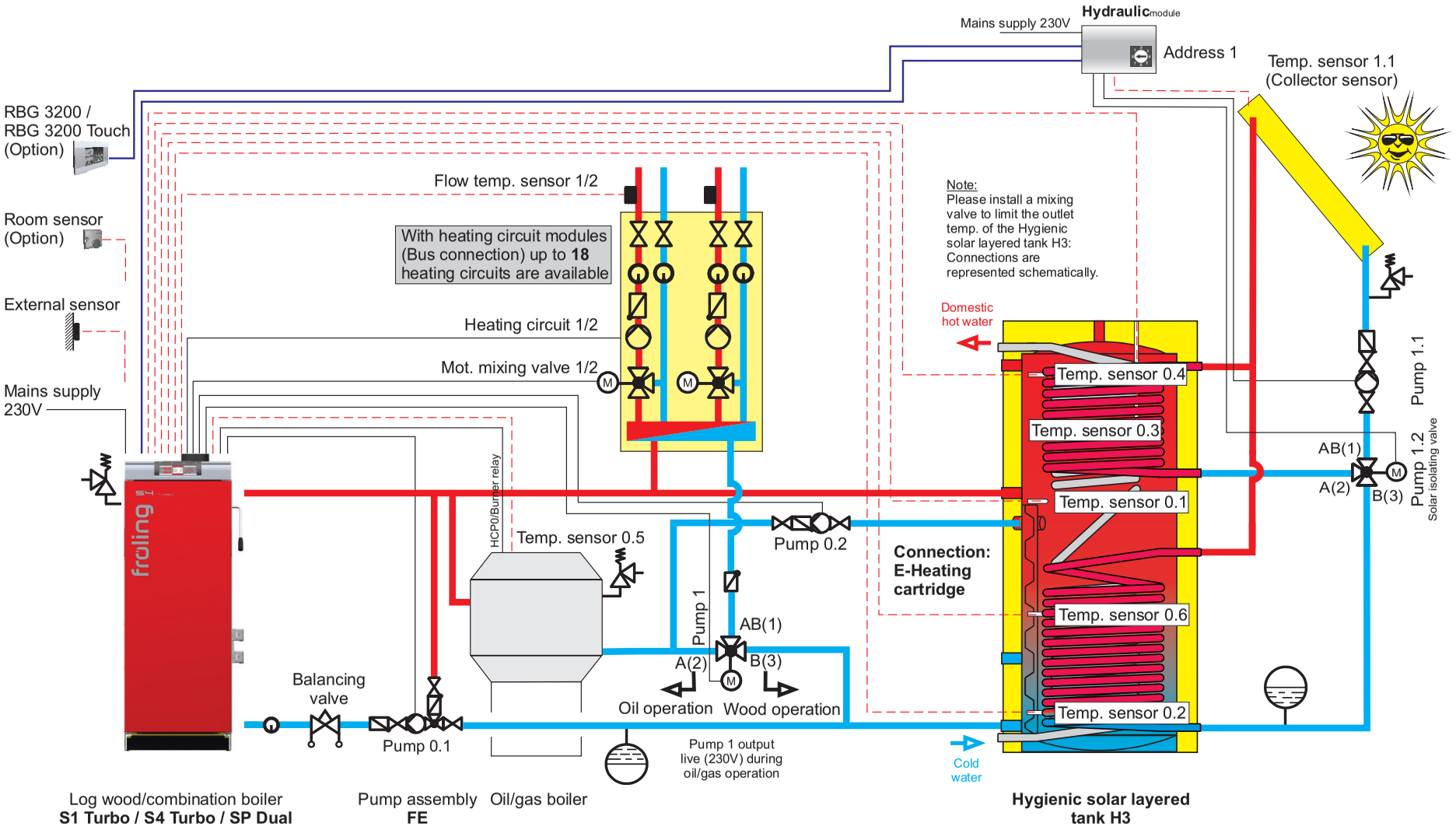
Note: Controller S3200



Note: Set parameter in menu SOLAR, item SERVICE, SOLAR SYSTEM to "3", WHICH SENSOR IS USED FOR BOTTOM DHW TANK to "1.2" and WHICH SENSOR IS USED FOR THE STORAGE TANK REFERENCE to "0.6"! Controller S3200

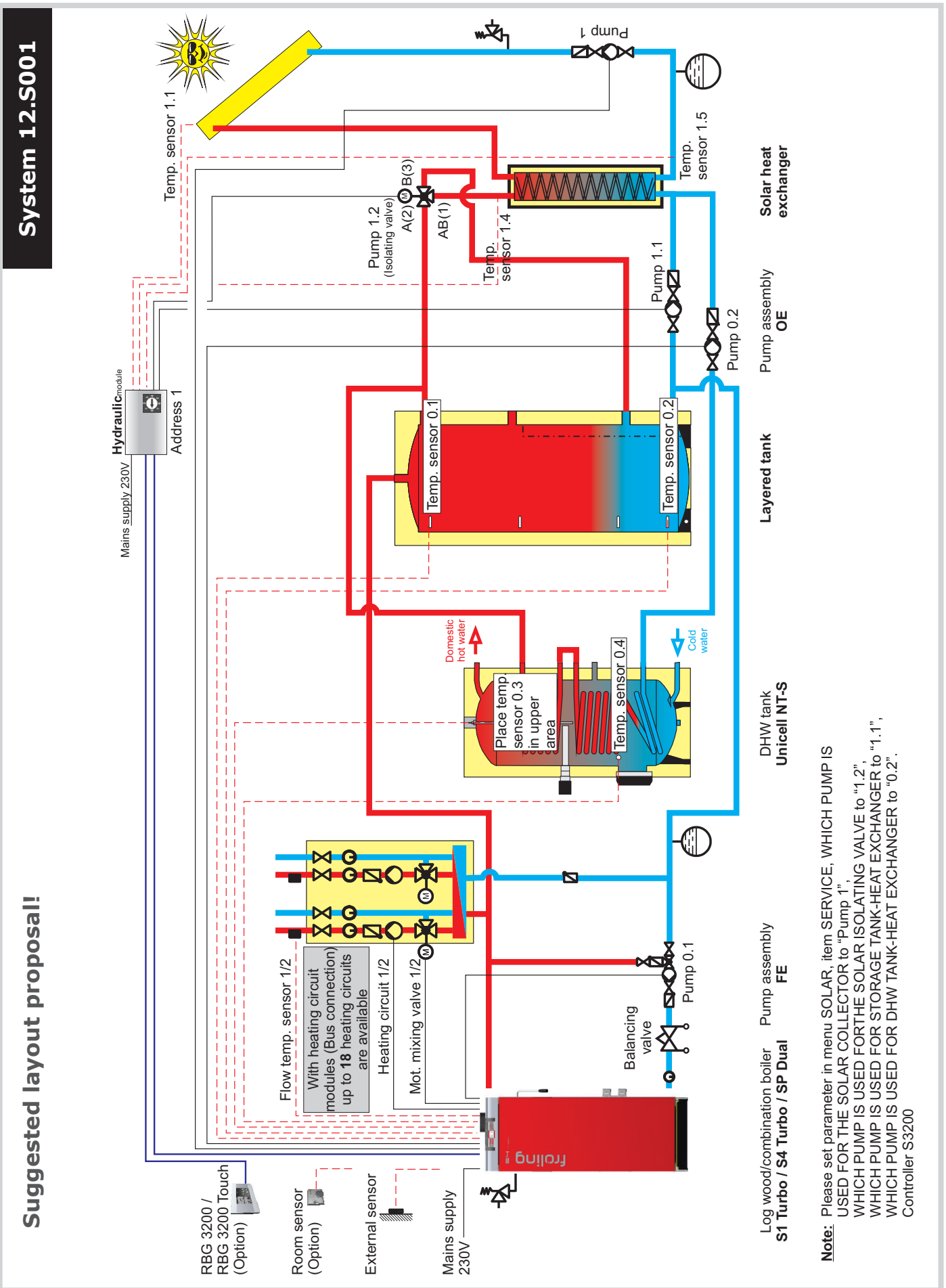
Suggested layout proposal!

System 2.S011



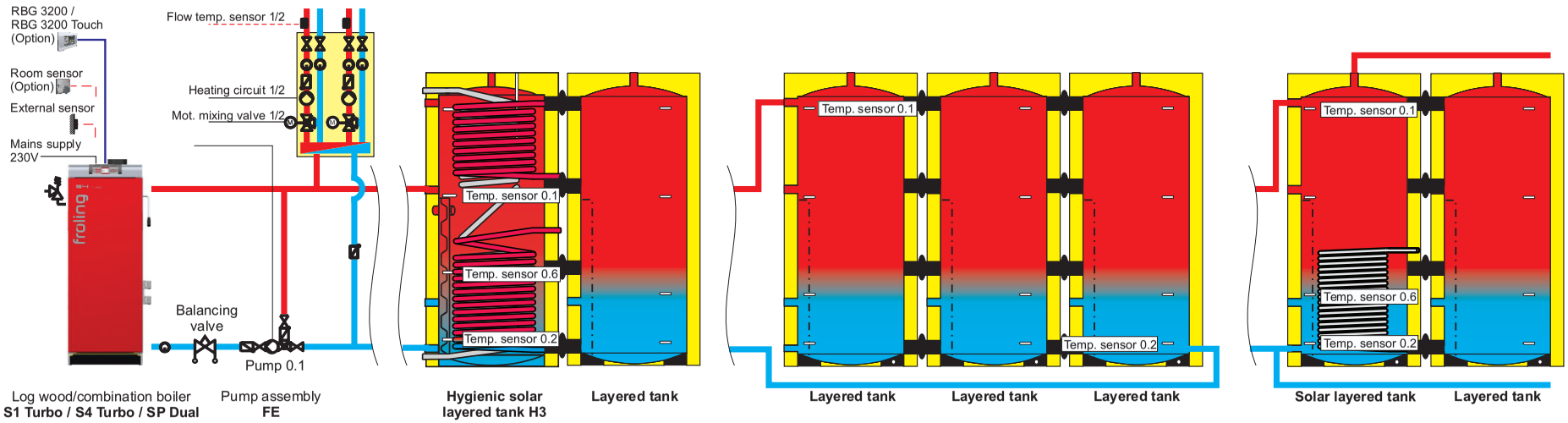
Note: Set parameter in menu SOLAR, item SERVICE, SOLAR SYSTEM to “3”,
WHICH SENSOR IS USED FOR THE STORAGE TANK REFERENCE to “0.6”.
Controller S3200

System 12.S001

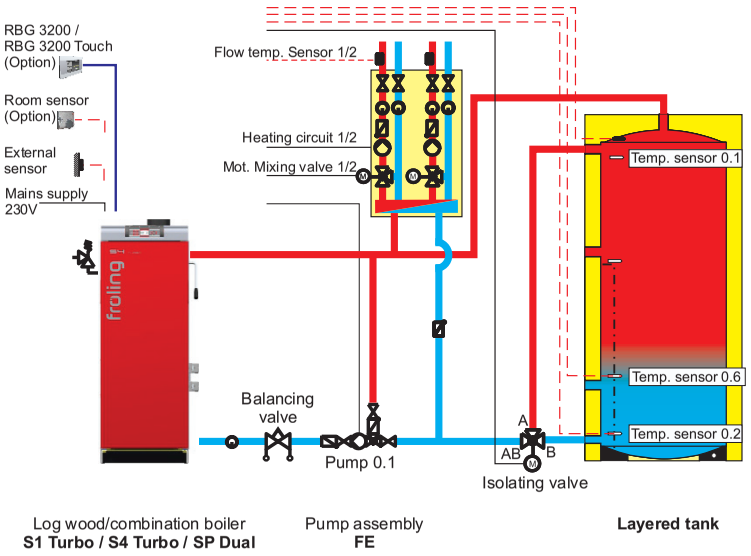


Suggested layout proposal!

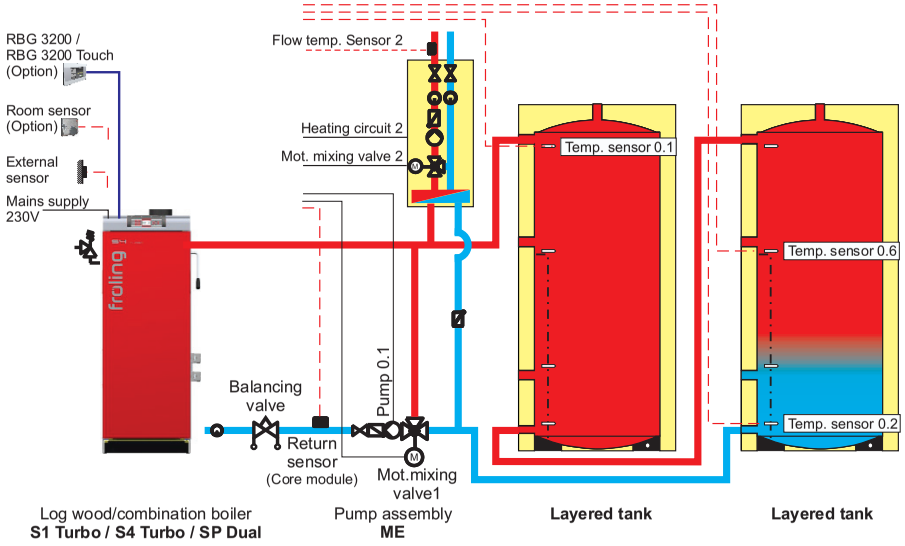
A) Coupled tank systems



B) Quick charge



C) Serial connection



Better heating with log wood and combination systems from Froling

Further technical details upon request.
We will be pleased to assist and advise you.

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