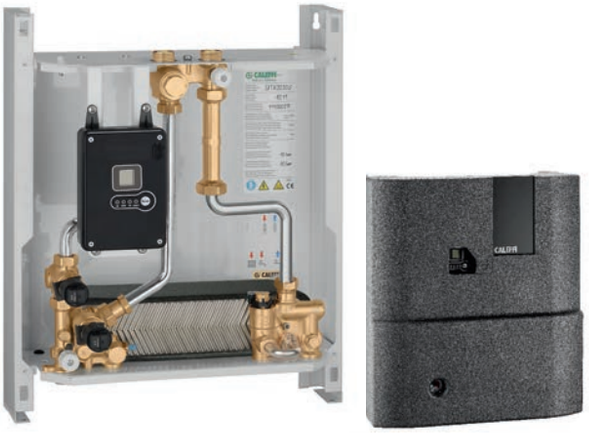
SATK wall-mounted Heat Interface Unit (HIU)

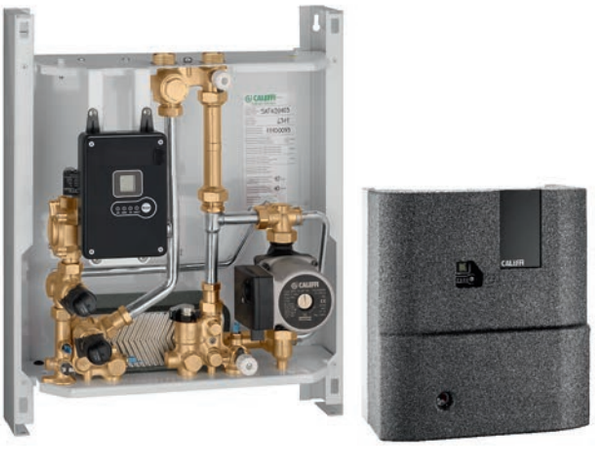
Instantaneous domestic hot water production

SATK20 - SATK30 series

01209/16 GB

replaces dp 01209/13 GB





Function

The latest generation of Heat Interface Units SATK20 and SATK30 provide space heating and instantaneous DHW production in housing units connected to a centralised heating system or district heating network.
SAK20 and SATK30 heat interface units, being two-way systems with modulating control of the heating medium (VFR - variable flow rate system), are particularly suitable in combination with condensing boilers and for connection to district heating, thanks to the low return temperature which characterize the products.

Product range

SATK20103HE Direct, wall-mounted HIU for LOW temperature heating, instantaneous domestic hot water production, nominal power capacity 40 kW.

SATK20203HE Direct, wall-mounted HIU for MEDIUM temperature heating, instantaneous domestic hot water production, nominal power capacity 40 kW.

SATK20303 Direct, wall-mounted HIU for HIGH temperature heating, instantaneous domestic hot water production, nominal power capacity 40 kW.

SATK20305 Direct, wall-mounted HIU for HIGH temperature heating, instantaneous domestic hot water production, nominal power capacity 65 kW.

SATK20403HE Direct, wall-mounted HIU for HIGH temperature heating, instantaneous domestic hot water production, nominal power capacity 40 kW.
With pump on the primary side.

SATK30103HE Indirect, wall-mounted HIU for LOW/HIGH temperature heating, instantaneous domestic hot water production, nominal power capacity 40 kW.

SATK30105HE Indirect, wall-mounted HIU for LOW/HIGH temperature heating, instantaneous domestic hot water production, nominal power capacity 65 kW.

Characteristics of centralised systems with instantaneous DHW production - SATK series HIU

Simpler pipework system
Unlike centralised systems with DHW production in the central heating system, heat interface units make it possible to make the distribution network simpler, eliminating 2 of the 5 pipes that must be routed into the apartments. An initial and important benefit is obtained in terms of lower capital investment and installation costs.

Easy and transparent metering
Metering of consumption is achieved by means of a heat meter (for consumption related to space heating and DHW production) and a single volume meter for the total amount of domestic water without dual metering for DHW and DCW.

No risk of legionnaires' disease
Local DHW production eliminates the condition for the development of the Legionella bacteria because hot water is produced only when needed. This dispenses with the need for anti-Legionella thermal disinfection of the distribution network.

Quick and stable DHW production
The speed of response of a heat interface unit depends solely on its position inside the dwelling and the speed of its internal regulation. The SATK series heat interface units are equipped with electronic regulation that continually acts on stepper actuators on modulating valves in order to guarantee that DHW temperature remains constant even in the presence of sudden changes in the tapped flow rate. To further reduce response times of the unit the exchanger preheating option can be activated to keep the unit constantly at operating temperature.

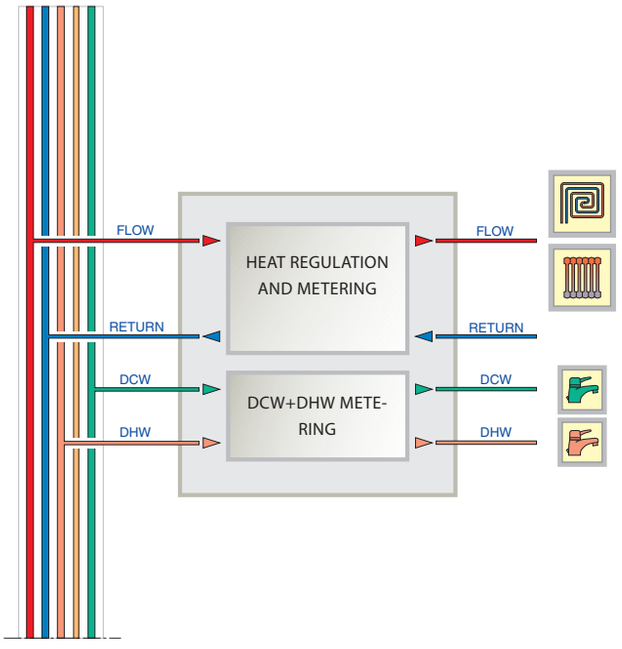
Priority of DHW production over heating
In the condition of a simultaneous request for heating and DHW the latter is given priority in order to maximize performances and make all the primary flow available for any possible peak of demand.

Simple integration of renewable energy sources
The variable volume design combined with the electronic control make SATK series heat interface units able to guarantee very cold return flows, allowing exploitation of alternative energies and low temperature heat sources.

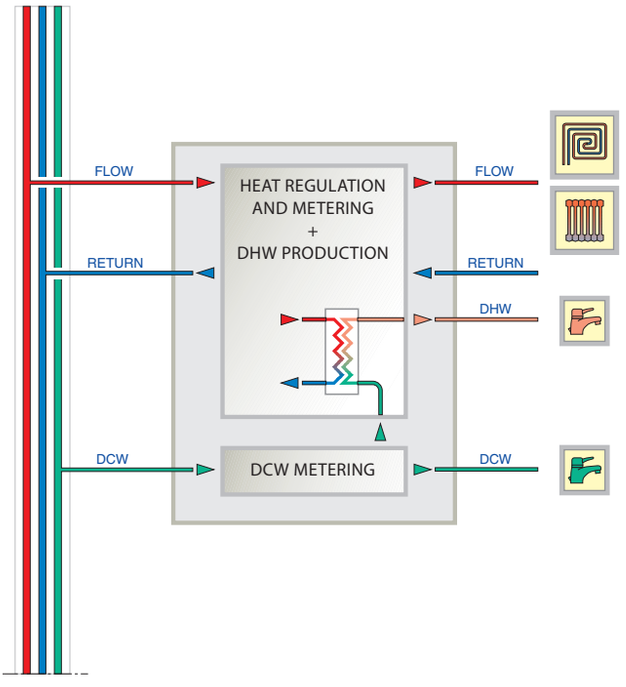
Easy and reduced maintenance
The greatest danger for a DHW production system, whether a heat interface unit or a domestic boiler, is the build up of limescale deposits in the heat exchanger. The higher is the domestic hot water temperature the higher is the risk of formation of limescale deposits. Since the system is equipped with electronic regulation that ensures DHW is produced directly at the temperature of use (without thermostatic mixer valves downstream of the exchanger), the water temperature in the exchanger is the minimum possible. In addition to this, when tapping ends, closing of primary modulating valve is extremely quick, with no risk of overheating of the water contained in the plate heat exchanger: the thermal exchange efficiency is therefore maximised while the risk of formation of limescale deposits is minimised.

SATK series heat interface units are designed to ensure the easiest and fastest possible maintenance work, with extreme ease of access to and, if necessary, removal and replacement of components.

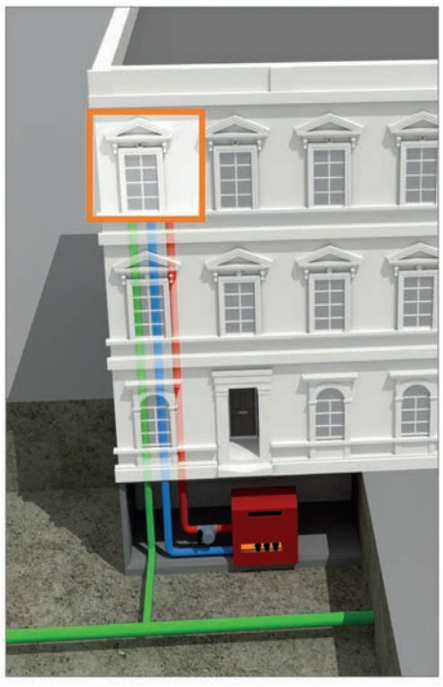
Metering in systems with centralised DHW



Metering in systems with instantaneous DHW



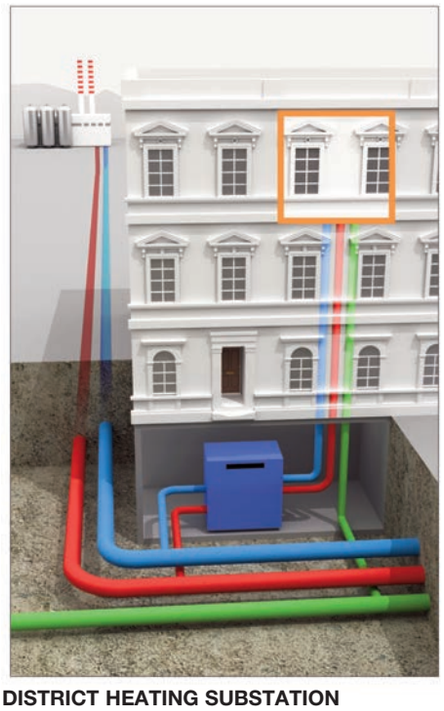
WALL-MOUNTED HEAT INTERFACE UNIT
INSTANTANEOUS DOMESTIC HOT WATER PRODUCTION - SATK SERIES



BOILER

LANDLORD AREA

HOUSING UNIT



DISTRICT HEATING SUBSTATION

Being compact in size, the wall-mounted heat interface units are suitable for in-home installation or concealed inside a kitchen cupboard. This makes it much easier for landlords to manage their own temperature regulation and domestic hot water production, freeing up space in the landlord area which can be used to house meters instead.

WALL-MOUNTED DIRECT HEAT INTERFACE UNITS
INSTANTANEOUS DOMESTIC HOT WATER PRODUCTION - SATK20 SERIES

SATK20103HE LOW temperature HIU with high-efficiency pump

- **Set point regulation or modulating temperature regulation with compensated set point**
- **Heating range 25–45°C**

- **DHW production range 42–60°C, up to 18 l/min**

Optional functions

Domestic water cycle: - domestic water preheating function
Heating cycle: - modulating regulation with compensated set point
- floor slab heating function

SATK20203HE MEDIUM temperature HIU with high-efficiency pump

- **Set point regulation**
- **Heating range 45–75°C**

- **DHW production range 42–60°C, up to 18 l/min**

Optional functions

Domestic water cycle: - domestic water preheating function
Heating cycle: - modulating regulation with compensated set point

SATK20303 HIGH temperature HIU
SATK20305 HIGH temperature HIU - High DHW capacity

- **ON/OFF regulation**
- **Max. temperature heating 85°C**

- **DHW production range 42–60°C, up to 18 l/min (SATK20303) up to 27 l/min (SATK20305)**

Optional functions

Domestic water cycle: - domestic water preheating function

SATK20403HE HIGH temperature HIU with high-efficiency pump

- **ON/OFF regulation**
- **Max. temperature heating 85°C**

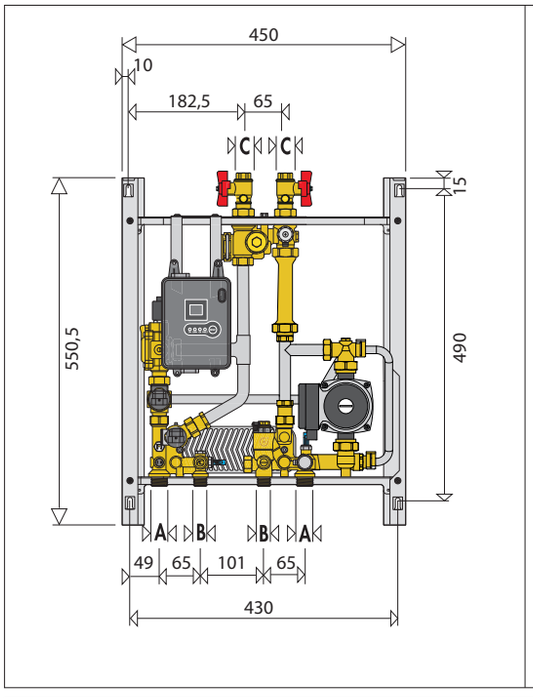
- **DHW production range 42–60°C, up to 18 l/min**

Optional functions

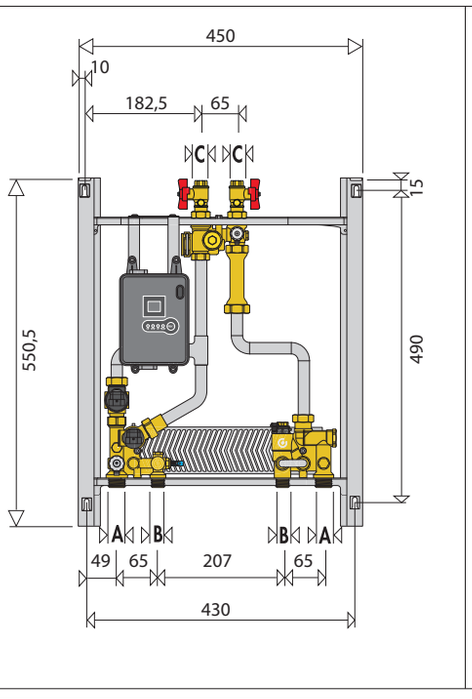
Domestic water cycle: - domestic water preheating function

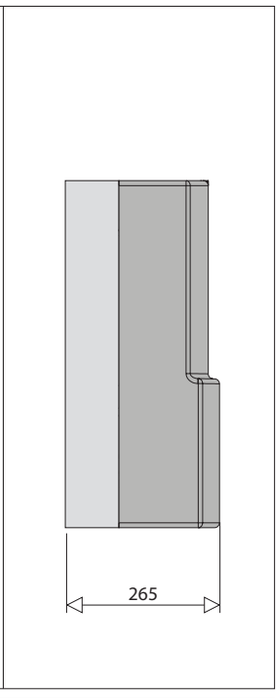
Dimensions

SATK20103/203/303/403



SATK20305





A	B	C
3/4" M	1/2" M	3/4" F

Technical specifications SATK20103HE - SATK20203HE SATK20303 - SATK20403HE

Medium:	water
Maximum percentage of glycol:	30%
Maximum medium temperature:	85°C
Max. working pressure: - primary circuit:	1 MPa (10 bar)
- domestic water circuit:	1 MPa (10 bar)
Nominal DHW exchanger capacity:	40 kW
Maximum recommended primary circuit flow rate:	1,2 m³/h
Domestic water circuit max. flow rate:	18 l/min (0,3 l/s)
Minimum flow to activate domestic water flow meter:	2,7 l/min ±0,3
Maximum differential pressure on domestic water modulating valve:	Δp 90 kPa (0,9 bar)
Maximum differential pressure on domestic water mixing or ON/OFF valve:	Δp 90 kPa (0,9 bar)
Electric supply:	230 V (ac) ±10% 50 Hz
Max power consumption:	80 W (20 W SATK20303)
Protection class:	IP 40
Pump:	UPM3 15-70
Pump by-pass setting:	45 kPa (0,45 bar)
Actuators:	stepper 24 V
Probes:	NTC 10 kΩ
Safety thermostat setting:	55°C ±3

Materials

Components:	brass EN 12165 CW617N
Fitting pipes:	steel
Frame:	RAL 9010 painted steel
Protective shell cover:	EPP
Heat exchanger:	copper brazed stainless steel

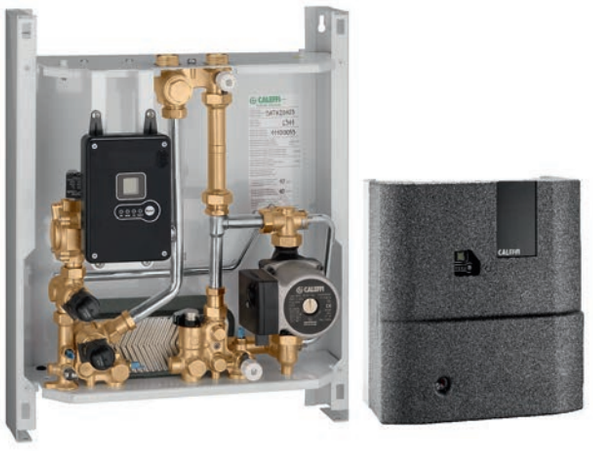
Technical specifications SATK20305

Medium:	water
Maximum percentage of glycol:	30%
Maximum medium temperature:	85°C
Max. working pressure: - primary circuit:	1 MPa (10 bar)
- domestic water circuit:	1 MPa (10 bar)
Nominal DHW exchanger capacity:	65 kW
Maximum recommended primary circuit flow rate:	1,2 m³/h
Domestic water circuit max. flow rate:	27 l/min (0,45 l/s)
Minimum flow to activate domestic water flow meter:	2,7 l/min ±0,3
Maximum differential pressure on domestic water modulating valve:	Δp 90 kPa (0,9 bar)
Maximum differential pressure on domestic water ON/OFF valve:	Δp 90 kPa (0,9 bar)
Electric supply:	230 V (ac) ±10% 50 Hz
Max power consumption:	20 W
Protection class:	IP 40
Actuators:	stepper 24 V
Probes:	NTC 10 kΩ

Materials

Components:	brass EN 12165 CW617N
Fitting pipes:	steel
Frame:	RAL 9010 painted steel
Protective shell cover:	EPP
Heat exchanger:	copper brazed stainless steel

SATK20103HE LOW temperature heat interface unit with high-efficiency pump



Functional characteristics

Heating range 25–45°C
Set point regulation

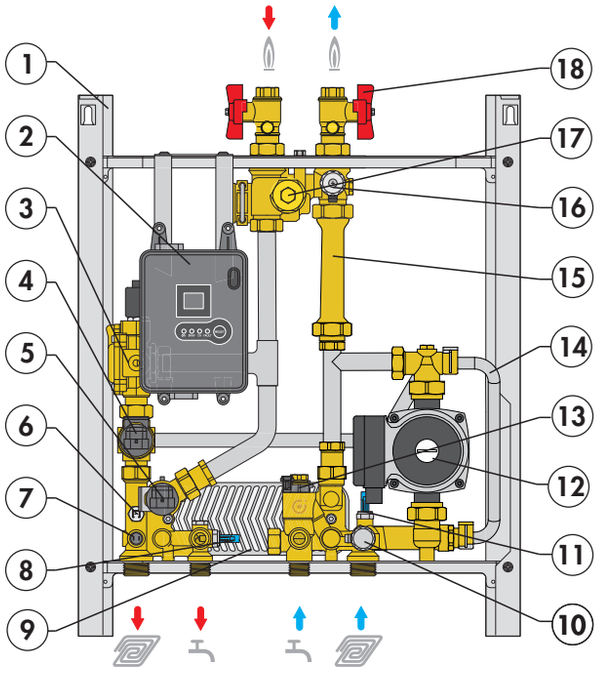
DHW production range 42–60°C, up to 18 l/min

Optional functions

Domestic water cycle: - domestic water preheating function

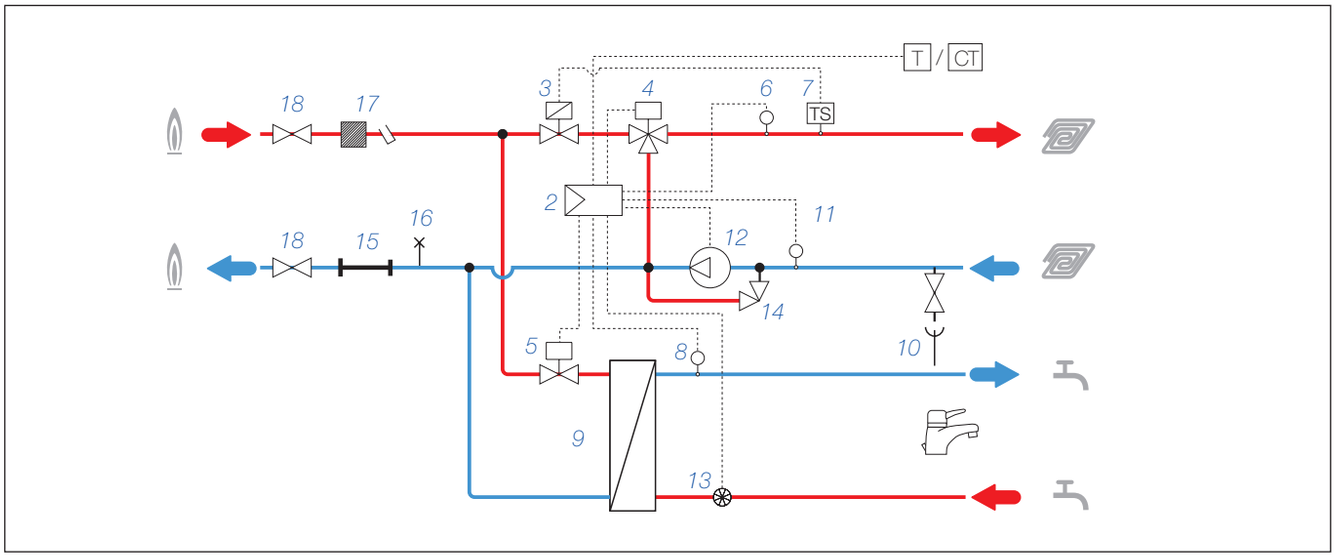
Heating cycle: - modulating regulation with compensated set point
- floor slab heating function

Characteristic components



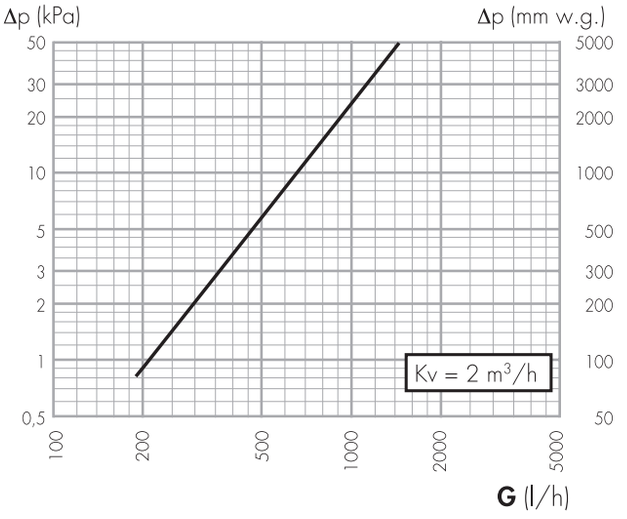
1. Frame
2. Electronic regulator
3. Thermal safety relief valve
4. Heating mixing valve
5. DHW production modulating valve
6. Heating flow temperature probe
7. Thermal safety thermostat
8. DHW temperature probe
9. DHW exchanger
10. Drain cock
11. Flow temp. compensation probe
12. Pump
13. DHW priority flow meter
14. Protective pump by-pass
15. Heat meter template spacer
16. Air vent cock
17. System strainer/heat meter flow probe pocket
18. Primary circuit shut-off valves

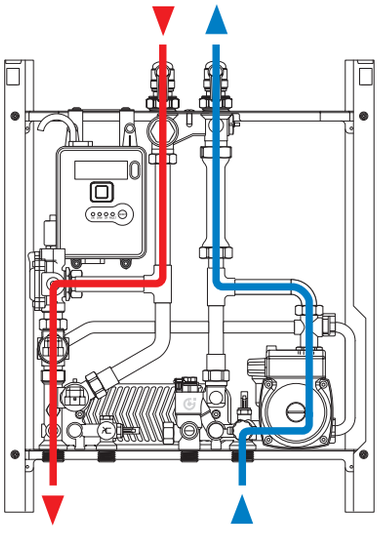
Hydraulic-functional diagram



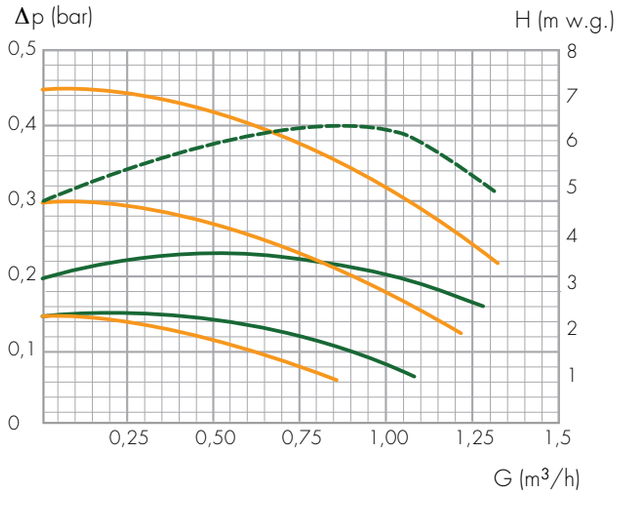
Hydraulic characteristics

Heating function



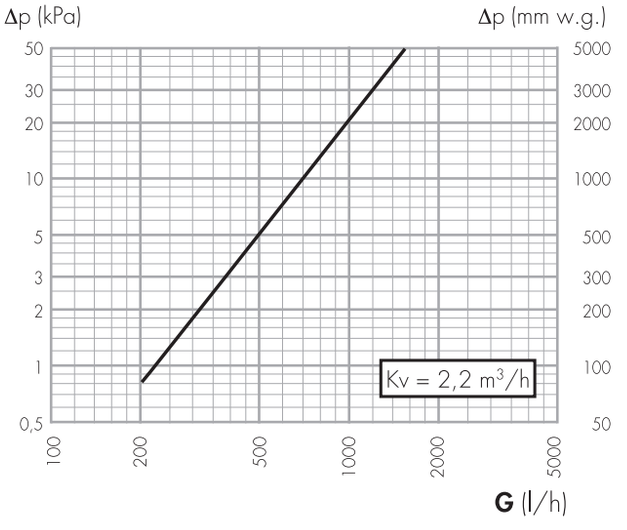


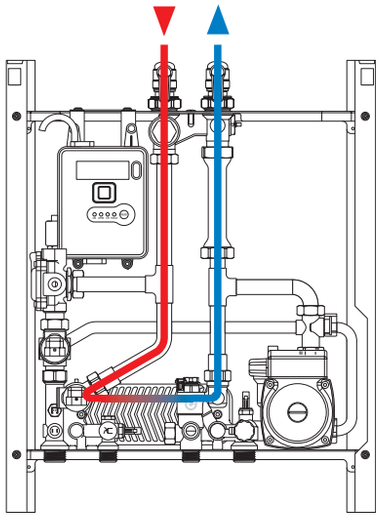
Head available at connections



Proportional head characteristics
Factory setting
Constant head characteristics

Domestic function - primary exchanger





SATK20203HE MEDIUM temperature heat interface unit with high-efficiency pump

Functional characteristics

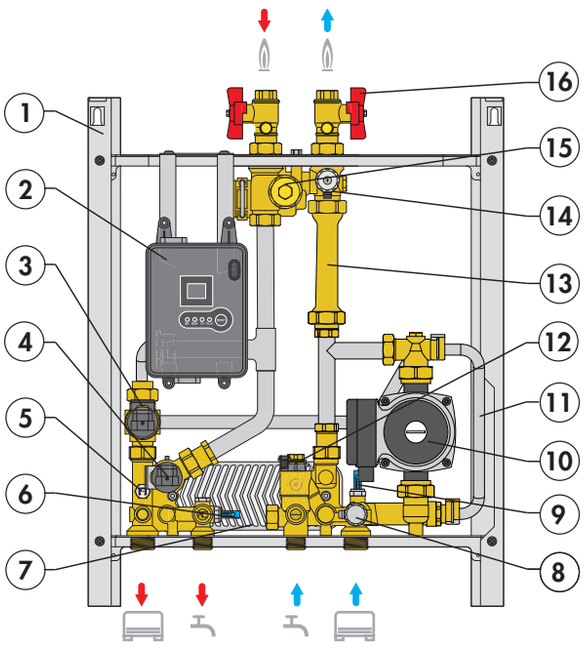
Heating range 45–75°C
Set point regulation

DHW production range 42–60°C, up to 18 l/min

Optional functions

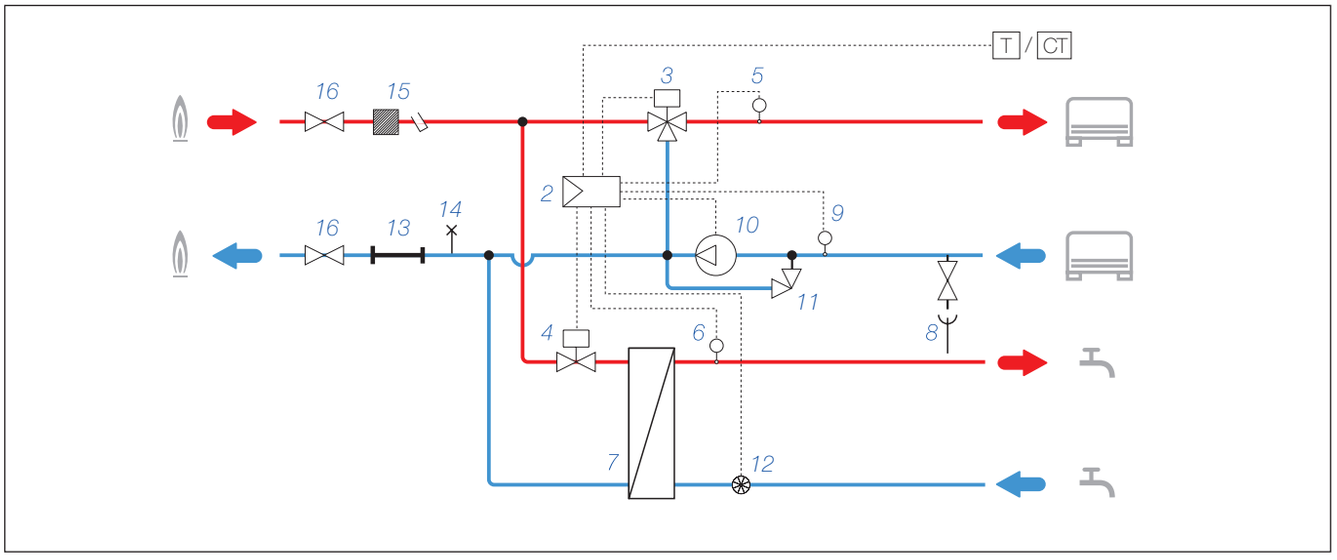
Domestic water cycle:	- domestic water preheating function
Heating cycle:	- modulating regulation with compensated set point

Characteristic components



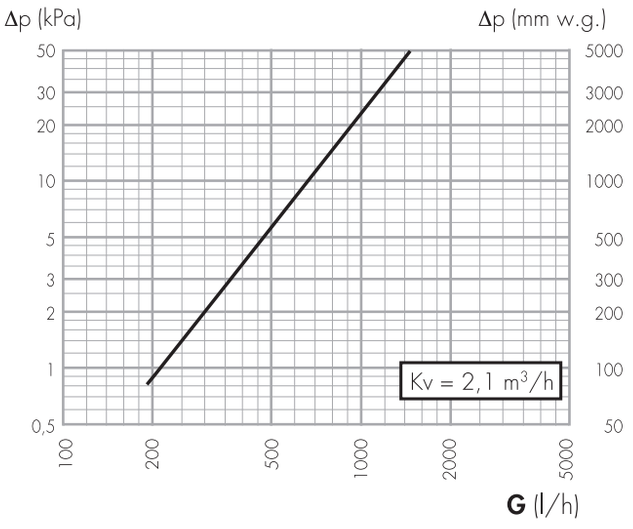
1. Frame
2. Electronic regulator
3. Heating mixing valve
4. DHW production modulating valve
5. Heating flow temperature probe
6. DHW temperature probe
7. DHW exchanger
8. Drain cock
9. Flow temp. compensation probe
10. Pump
11. Protective pump by-pass
12. DHW priority flow meter
13. Heat meter template spacer
14. Air vent cock
15. System strainer/heat meter flow probe pocket
16. Primary circuit shut-off valves

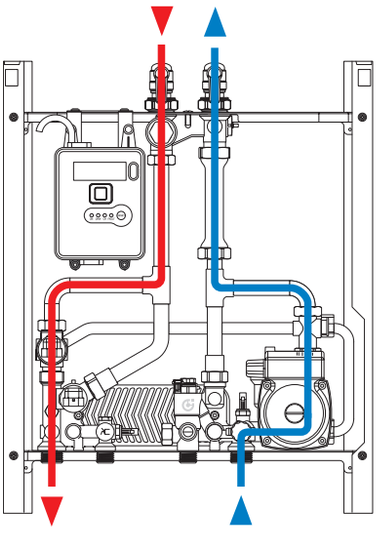
Hydraulic-functional diagram



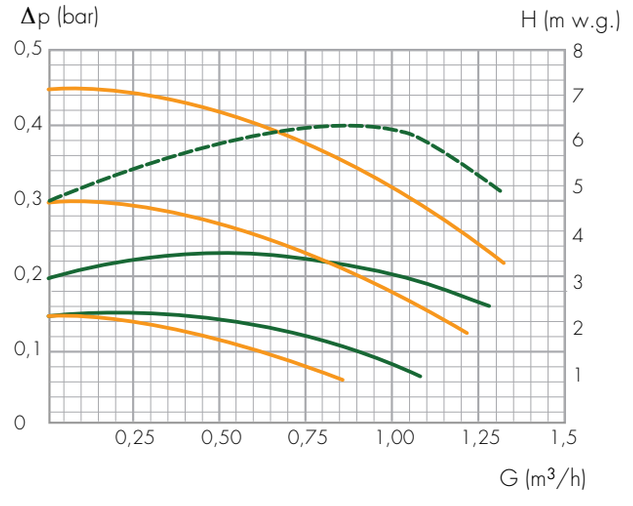
Hydraulic characteristics

Heating function



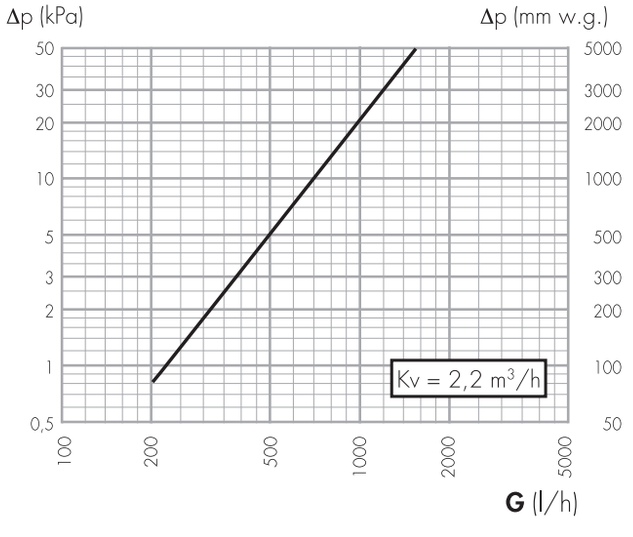


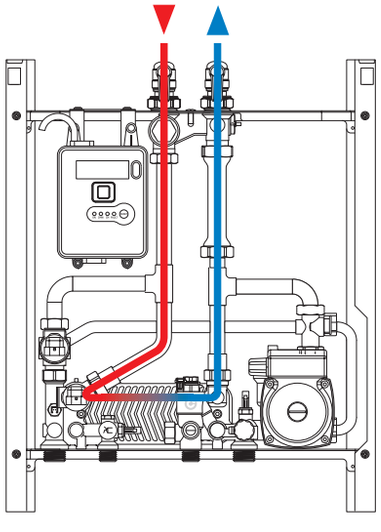
Head available at connections



Proportional head characteristics
Factory setting
Constant head characteristics

Domestic function - primary exchanger





SATK20303 HIGH temperature HIU
SATK20403HE HIGH temperature HIU with high efficiency primary pump

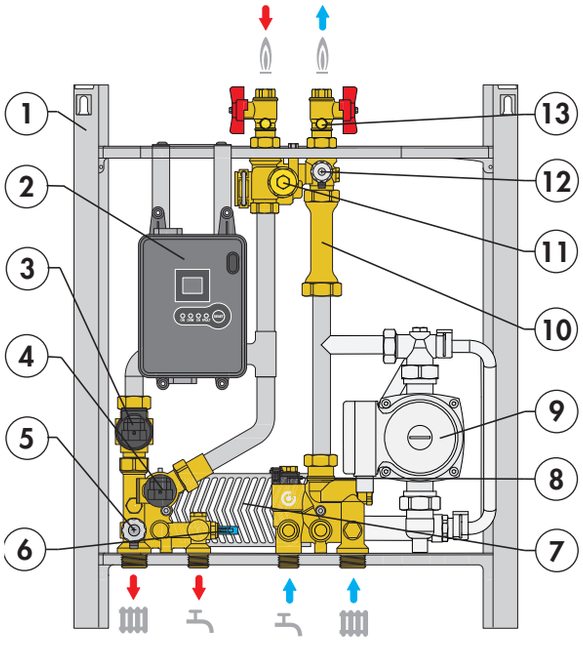
Functional characteristics

Max. heating temperature 85°C
ON/OFF regulation

DHW production range 42–60°C, up to 18 l/min

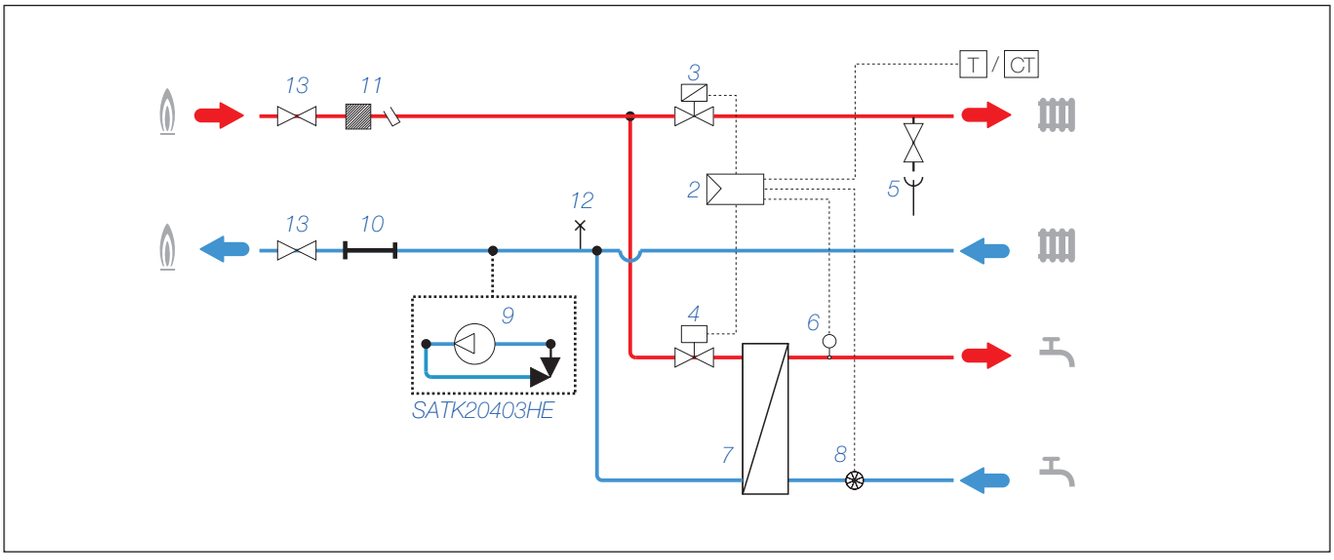
Optional functions
Domestic water cycle: - domestic water preheating function

Characteristic components



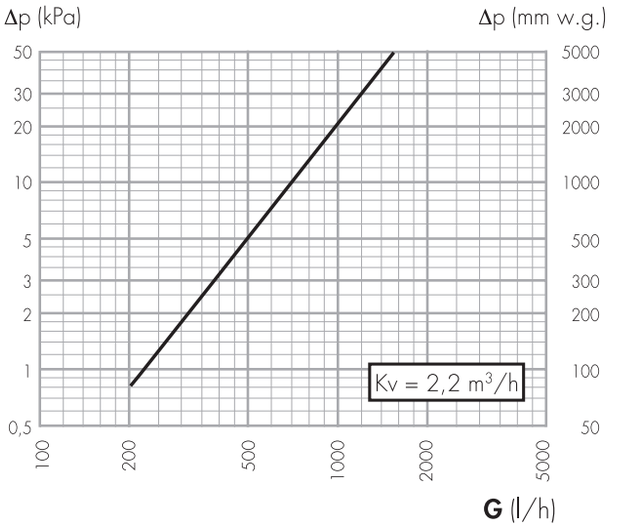
1. Frame
2. Electronic regulator
3. Heating ON/OFF valve
4. DHW production modulating valve
5. Drain cock
6. DHW temperature probe
7. DHW exchanger
8. DHW priority flow meter
9. Pump (SATK20403HE only) with safety by-pass
10. Heat meter template spacer
11. System strainer/heat meter flow probe pocket
12. Air vent cock
13. Primary circuit shut-off valves

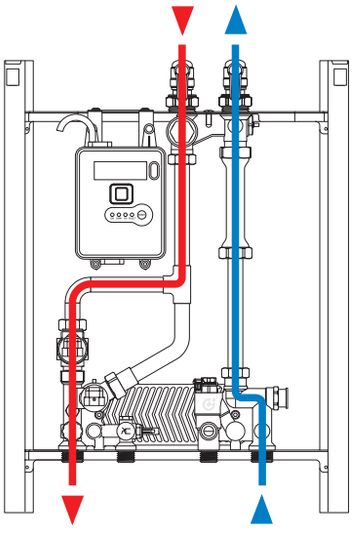
Hydraulic-functional diagram



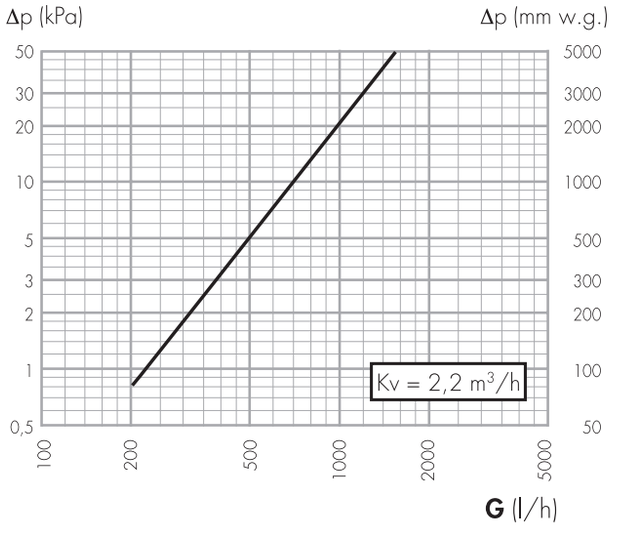
Hydraulic characteristics

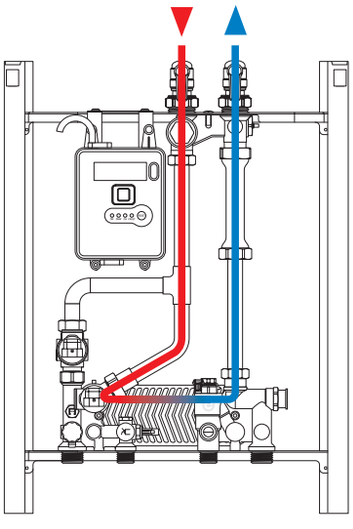
Heating function



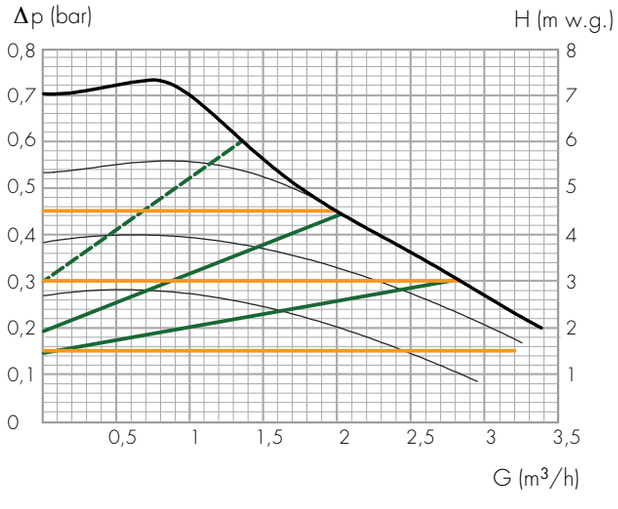


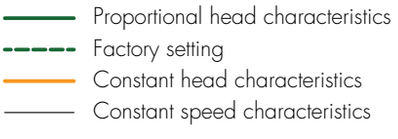
Domestic function - primary exchanger





Pump characteristics (SATK20403HE)





SATK20305 HIGH temperature HIU - High DHW capacity

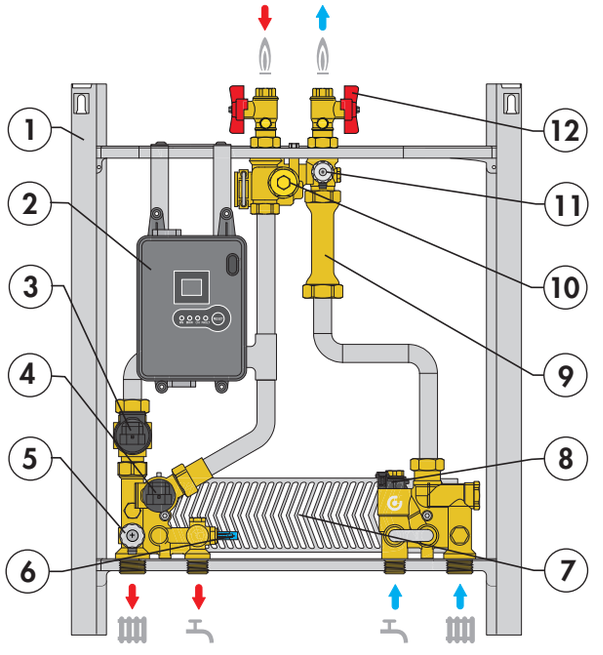
Functional characteristics

Max. heating temperature 85°C
ON/OFF regulation

DHW production range 42–60°C, up to 27 l/min

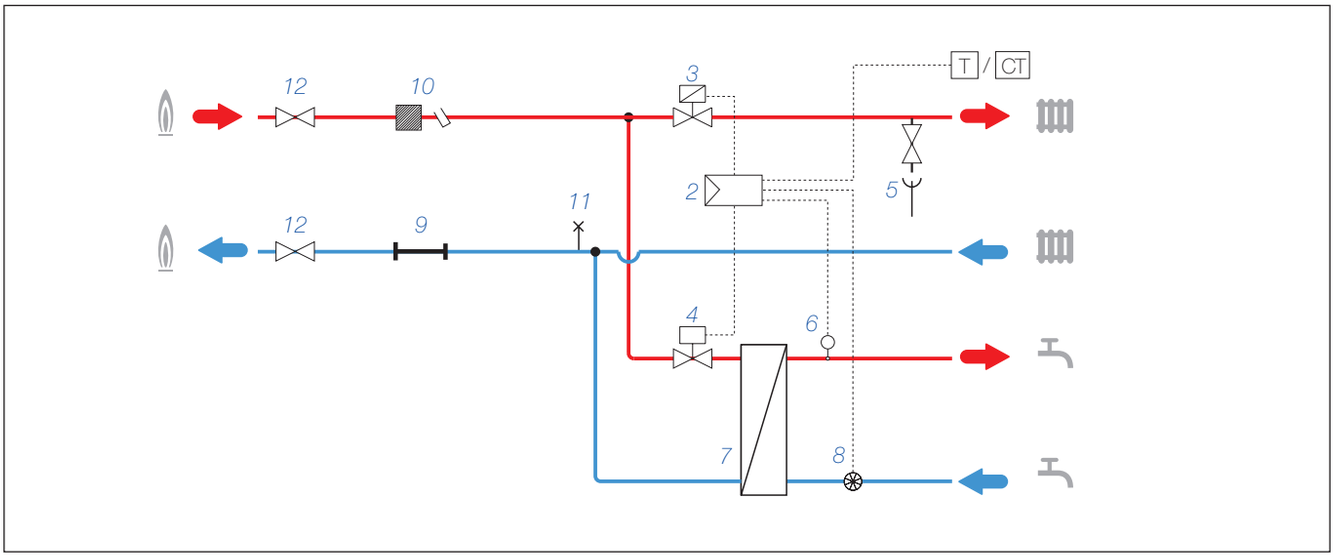
Optional functions
Domestic water cycle: - domestic water preheating function

Characteristic components



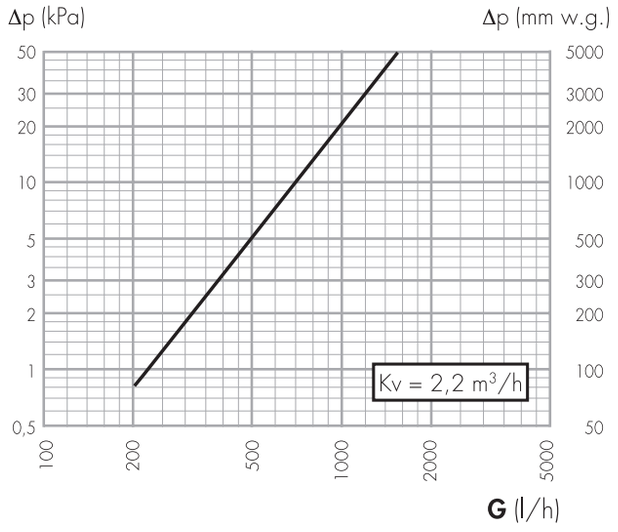
1. Frame
2. Electronic regulator
3. Heating ON/OFF valve
4. DHW production modulating valve
5. Drain cock
6. DHW temperature probe
7. DHW exchanger
8. DHW priority flow meter
9. Heat meter template spacer
10. System strainer/heat meter flow probe pocket
11. Air vent cock
12. Primary circuit shut-off valves

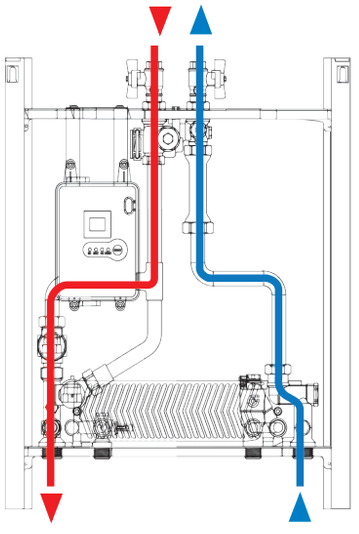
Hydraulic-functional diagram



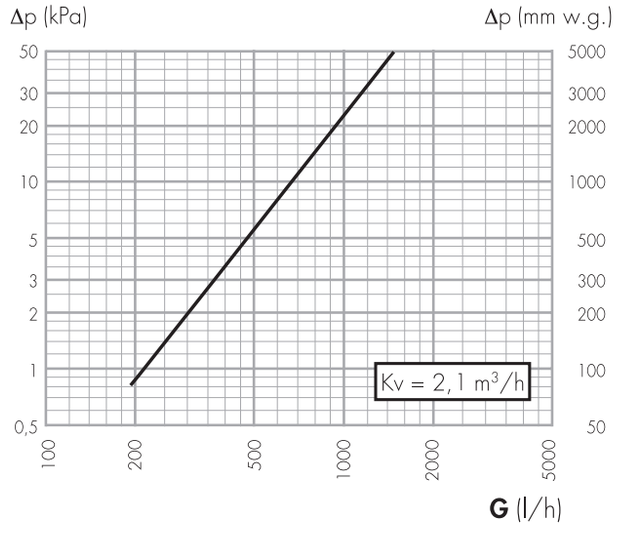
Hydraulic characteristics

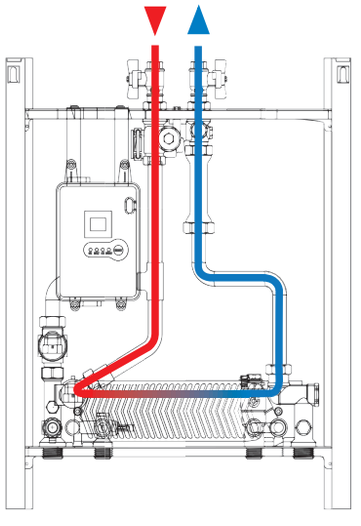
Heating function





Domestic function - primary exchanger



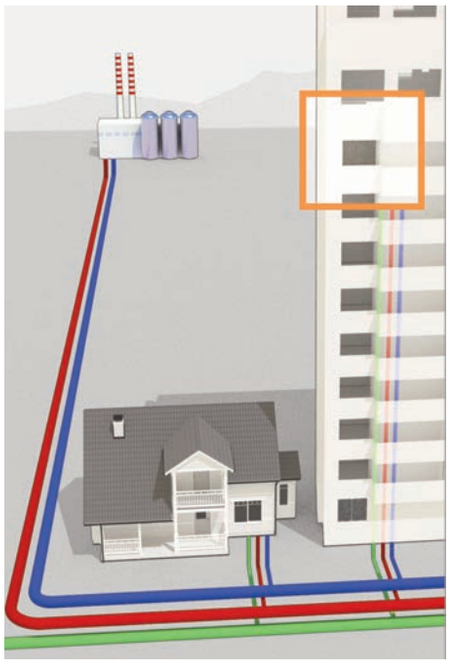


WALL-MOUNTED INDIRECT HEAT INTERFACE UNIT INSTANTANEOUS DHW PRODUCTION - SATK30 SERIES

The SATK30 HIU is the most compact, complete and efficient solution for enclosures in individual dwellings for use in:
- district heating
- centralised heating systems which require a high static pressure and high temperature medium, characteristics which could cause injury.

The SATK30 heat interface unit offers the feature of keeping the primary and secondary water completely separate.
This type of device is useful when designing or renewing the heating and domestic hot water systems of apartment buildings under renovation, as well as facilitating any maintenance operation without the risk of impurities entering the secondary heating systems.

The modulating action of the electronic regulator minimize the primary flow rate which is drawn by the HIU, maximizing the temperature difference between flow and return. This has a positive impact on the pipe sizing and overall thermal losses of the system.
A high primary ΔT makes SATK30 series HIUs compliant with district heating rules and allows condesing boilers to work at maximum efficiency conditions.



SATK30103HE Indirect HIU with high efficiency pump

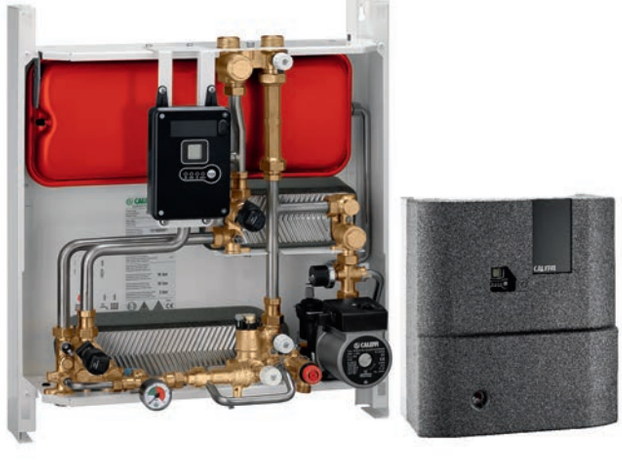
- **Set point regulation or modulating temperature regulation with compensated set point**
- **Heating range**
  - **LOW temperature setting 25–45°C**
  - **MEDIUM/HIGH temperature setting 45–75°C**

- **DHW production range 42–60°C, up to 18 l/min.**

Optional functions
Domestic water cycle: - domestic water preheating function

Heating cycle (at LOW temperature setting):
- modulating regulation with compensated set point
- floor slab heating function

SATK30105HE Indirect HIU with H.E. pump, high DHW capacity



- **Set point regulation or modulating temperature regulation with compensated set point**
- **Heating range**
  - **LOW temperature setting 25–45°C**
  - **MEDIUM/HIGH temperature setting 45–75°C**

- **DHW production range 42–60°C, up to 27 l/min.**

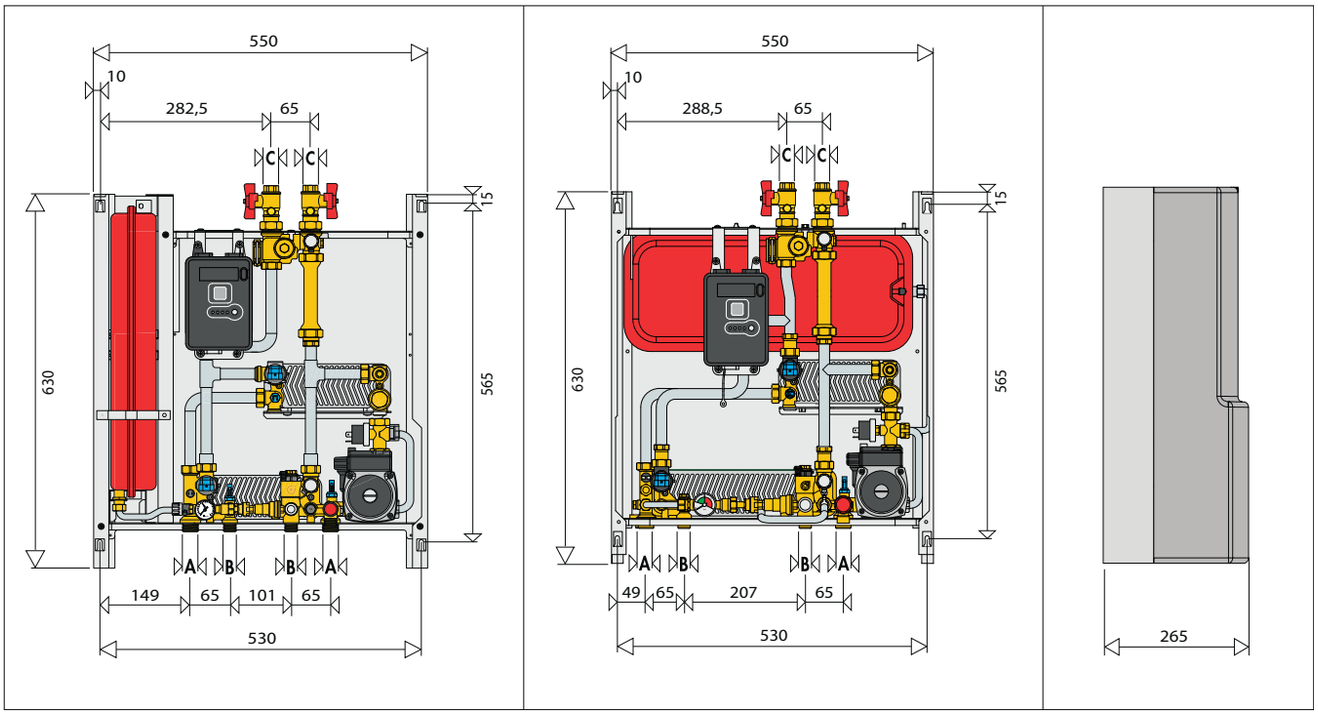
Optional functions
Domestic water cycle: - domestic water preheating function

Heating cycle (at LOW temperature setting):
- modulating regulation with compensated set point
- floor slab heating function

Dimensions

SATK30103HE

SATK30105HE



A	B	C
3/4" M	1/2" M	3/4" F

Technical specifications SATK30103HE

Medium:		water
Maximum percentage of glycol:		30%
Maximum medium temperature:		85°C
Max. working pressure:	- primary circuit:	1,6 MPa (16 bar)
	- secondary circuit:	0,3 MPa (3 bar)
	- domestic water circuit:	1 MPa (10 bar)
Nominal DHW exchanger capacity:		40 kW
Nominal heating exchanger capacity:		15 kW
Maximum recommended primary circuit flow rate:		1,2 m^3/h
Maximum differential pressure on primary circuit modulating valves:		Δp 90 kPa (0,9 bar)
Domestic water circuit max. flow rate:		18 l/min (0,3 l/s)
Minimum flow to activate domestic water flow meter:		2,7 l/min ±0,3
Electric supply:		230 V (ac) ±10% 50 Hz
Max power consumption:		80 W
Protection class:		IP 40
Pump:		UPM3 15-70
Pump by-pass setting:		45 kPa (0,45 bar)
Actuators:		stepper 24 V
Probes:		NTC 10 kΩ
Safety relief valve setting:		0,3 MPa (3 bar)
Safety thermostat:		55°C ±3
Expansion vessel:	- capacity:	7 l
	- pre-charge value:	0,1 MPa (1 bar)
Pressure switch:	- opening:	40 kPa (0,4 bar)
	- closing:	80 kPa (0,8 bar)

Materials

Components:	brass EN 12165 CW617N
Fitting pipes:	steel
Frame:	RAL 9010 painted steel
Protective shell cover:	EPP
Heat exchanger:	brazed stainless steel

Technical specifications SATK30105HE

Medium:		water
Maximum percentage of glycol:		30%
Maximum medium temperature:		85°C
Max. working pressure:	- primary circuit:	1,6 MPa (16 bar)
	- secondary circuit:	0,3 MPa (3 bar)
	- domestic water circuit:	1 MPa (10 bar)
Nominal DHW exchanger capacity:		65 kW
Nominal heating exchanger capacity:		15 kW
Maximum recommended primary circuit flow rate:		1,2 m^3/h
Maximum differential pressure on primary circuit modulating valves:		Δp 165 kPa (1,65 bar)
Domestic water circuit max. flow rate:		27 l/min (0,45 l/s)
Minimum flow to activate domestic water flow meter:		2,7 l/min ±0,3
Electric supply:		230 V (ac) ±10% 50 Hz
Max power consumption:		80 W
Protection class:		IP 40
Pump:		UPM3 15-70
Pump by-pass setting:		45 kPa (0,45 bar)
Actuators:		stepper 24 V
Probes:		NTC 10 kΩ
Safety relief valve setting:		0,3 MPa (3 bar)
Safety thermostat:		55°C ±3
Expansion vessel:	- capacity:	7 l
	- pre-charge value:	0,1 MPa (1 bar)
Pressure switch:	- opening:	40 kPa (0,4 bar)
	- closing:	80 kPa (0,8 bar)

Materials

Components:	brass EN 12165 CW617N
Fitting pipes:	steel
Frame:	RAL 9010 painted steel
Protective shell cover:	EPP
Heat exchanger:	brazed stainless steel

SATK30103HE Indirect HIU with high-efficiency pump

Functional characteristics

Heating range
- **LOW temperature setting 25–45°C**
- **HIGH temperature setting 45–75°C**

Set point regulation

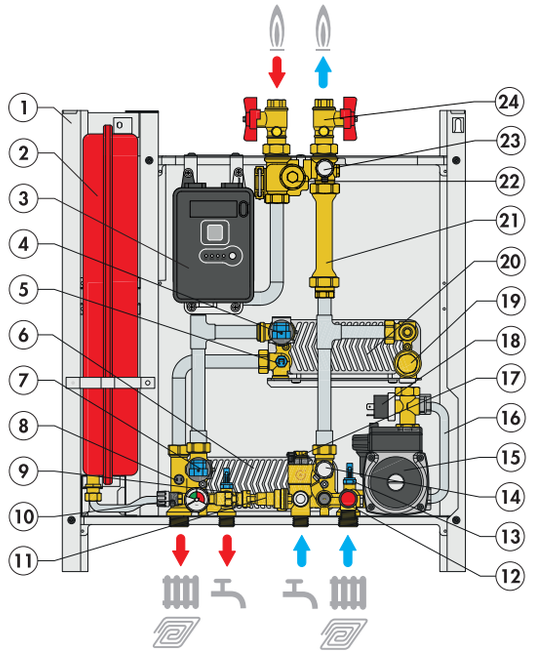
DHW production range 42–60°C, up to 18 l/min

Optional functions

Domestic water cycle: - domestic water preheating function

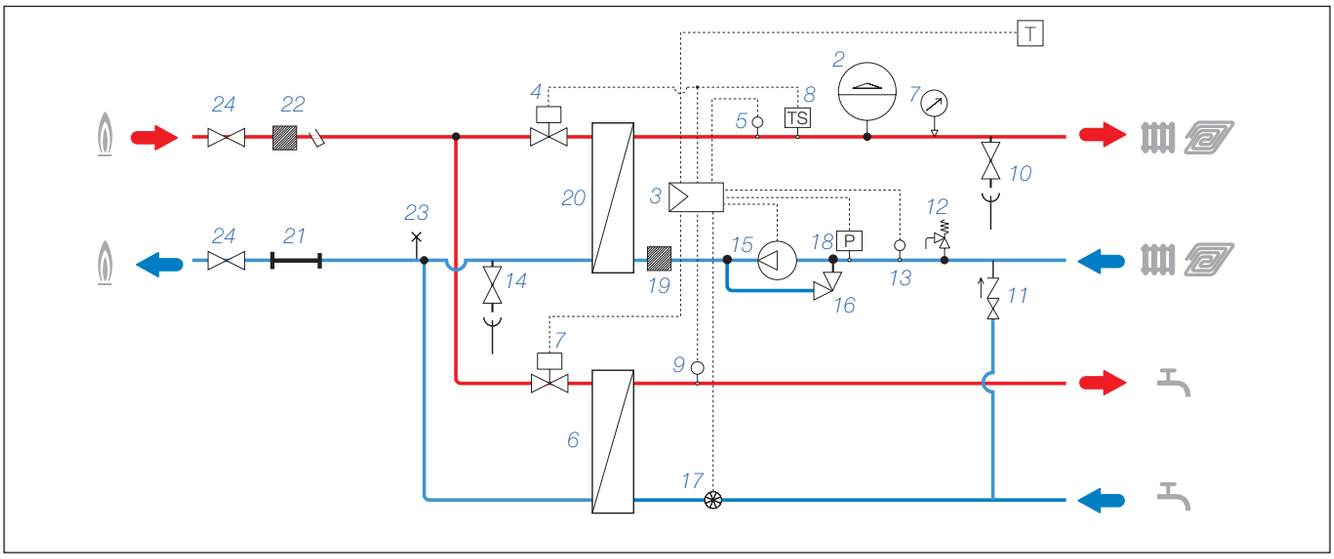
Heating cycle at LOW temperature setting:
- modulating regulation with compensated set point
- floor slab heating function

Characteristic components



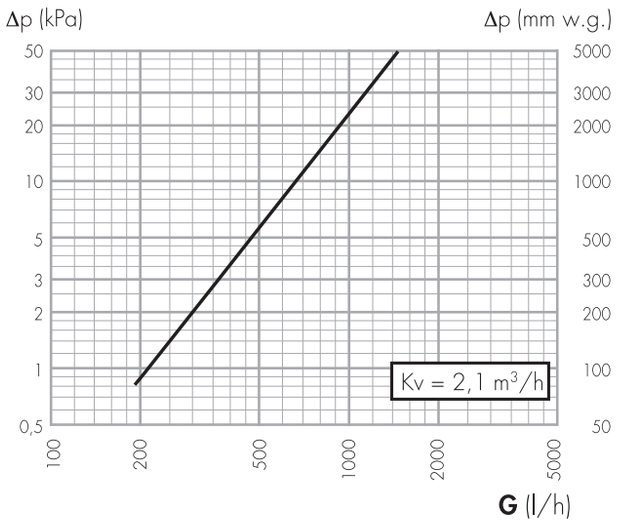
1. Frame
2. Expansion vessel
3. Electronic regulator
4. 2-way modulating valve (primary heating)
5. Heating flow temperature probe (secondary)
6. DHW heat exchanger
7. 2-way modulating valve - DHW
8. Thermal safety thermostat
9. DHW temperature probe
10. Secondary heating drain cock
11. Filling unit with backflow preventer
12. Safety relief valve
13. Flow temp. compensation return probe
14. Primary circuit drain cock
15. Pump
16. Protective by-pass
17. DHW priority flow meter
18. Pressure switch
19. Secondary heating strainer
20. Heating exchanger
21. Heat meter spacer template
22. Primary circuit strainer/flow probe pocket
23. Primary air vent cock
24. Primary circuit shut-off valves

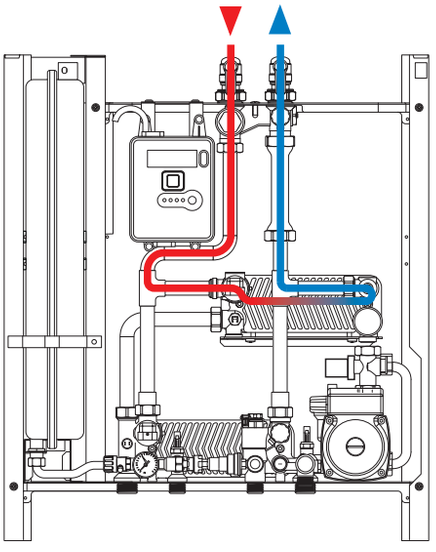
Hydraulic-functional diagram



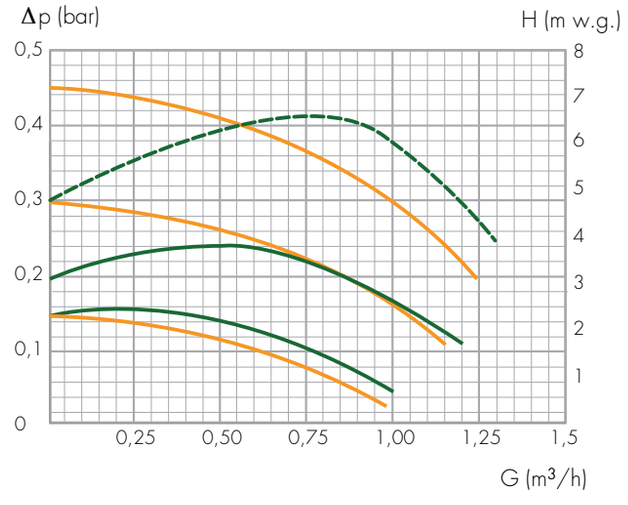
Hydraulic characteristics

Heating function



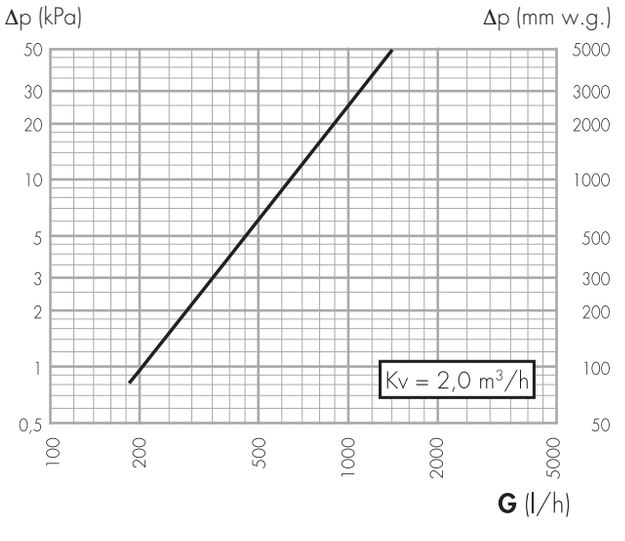


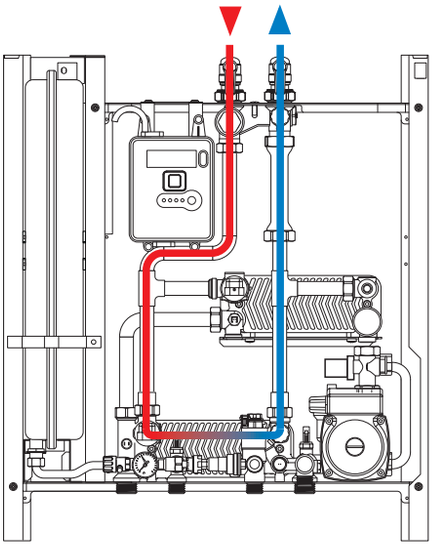
Head available at connections



Proportional head characteristics
Factory setting
Constant head characteristics

Domestic function - primary exchanger





SATK30105HE Indirect HIU with high-efficiency pump - High DHW capacity

Functional characteristics

Heating range
- **LOW temperature setting 25–45°C**
- **HIGH temperature setting 45–75°C**

Set point regulation

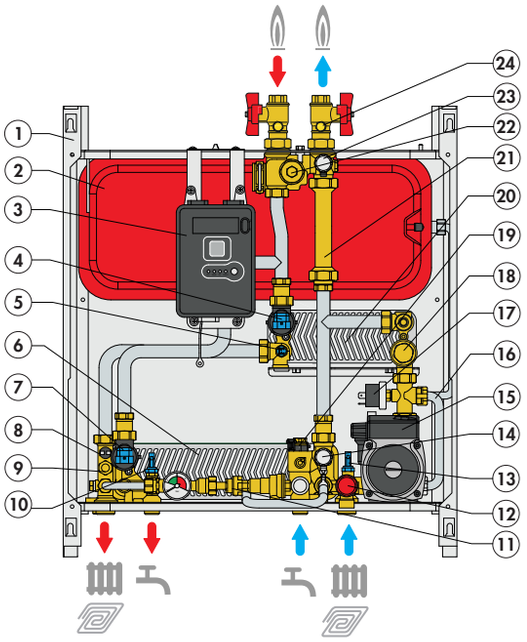
DHW production range 42–60°C, up to 27 l/min

Optional functions

Domestic water cycle: - domestic water preheating function

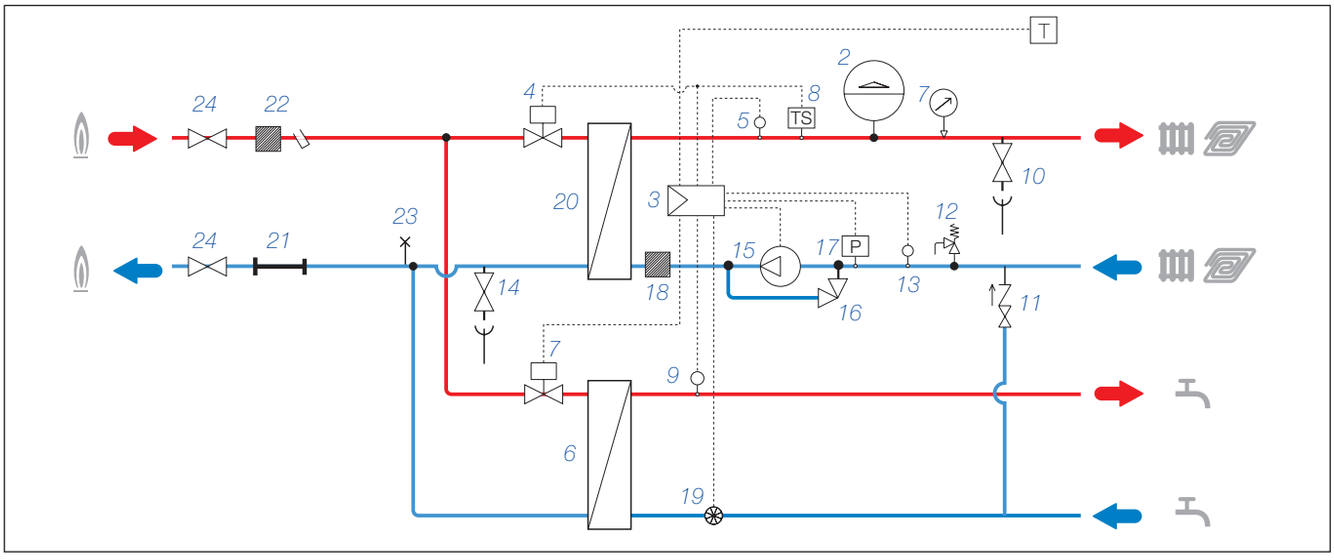
Heating cycle at LOW temperature setting:
- modulating regulation with compensated set point
- floor slab heating function

Characteristic components



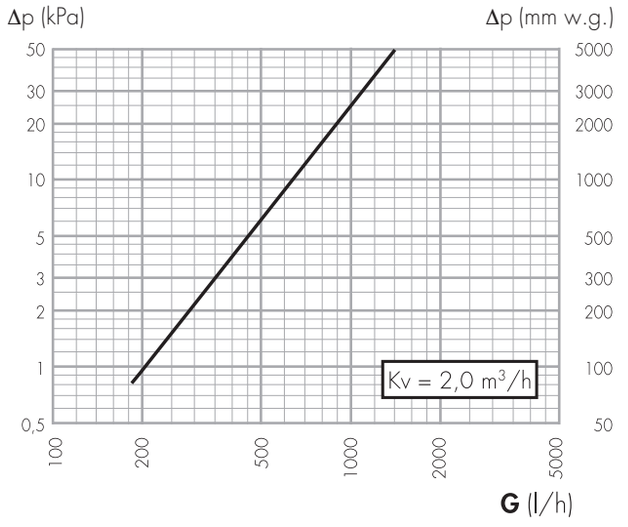
1. Frame
2. Expansion vessel
3. Electronic regulator
4. 2-way modulating valve (primary heating)
5. Heating flow temperature probe (secondary)
6. DHW heat exchanger
7. 2-way modulating valve - DHW
8. Thermal safety thermostat
9. Secondary heating drain cock
10. DHW temperature probe
11. Filling unit with backflow preventer
12. Safety relief valve
13. Flow temp. compensation return probe
14. Primary circuit drain cock
15. Pump
16. Protective by-pass
17. Pressure switch
18. Heating strainer (secondary)
19. DHW priority flow meter
20. Heating exchanger
21. Heat meter spacer template
22. Primary circuit strainer/flow probe pocket
23. Primary air vent cock
24. Primary circuit shut-off valves

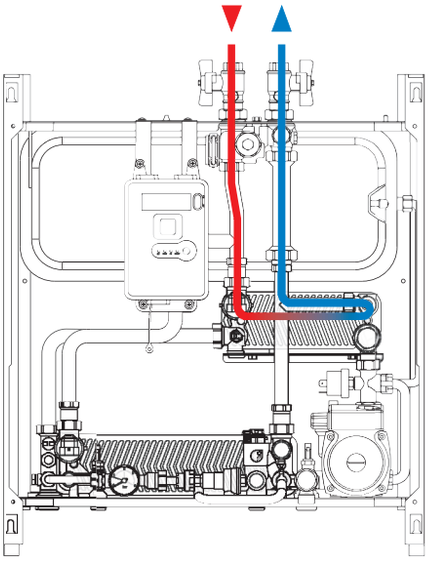
Hydraulic-functional diagram



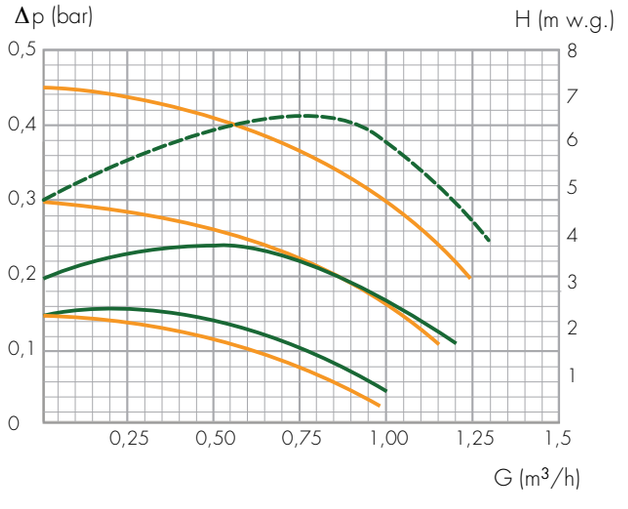
Hydraulic characteristics

Heating function



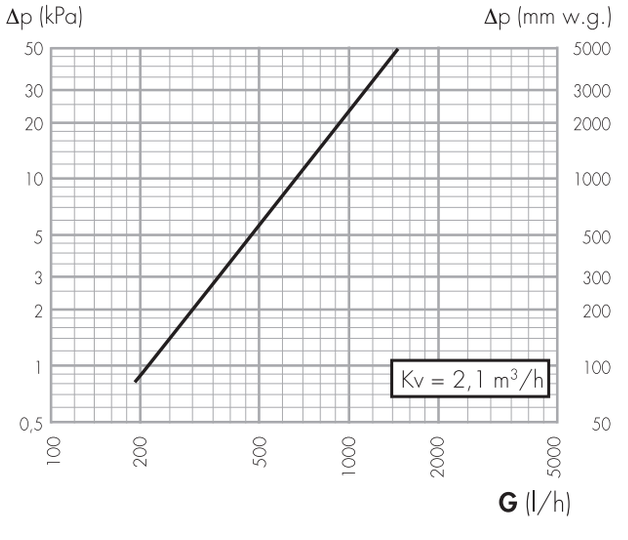


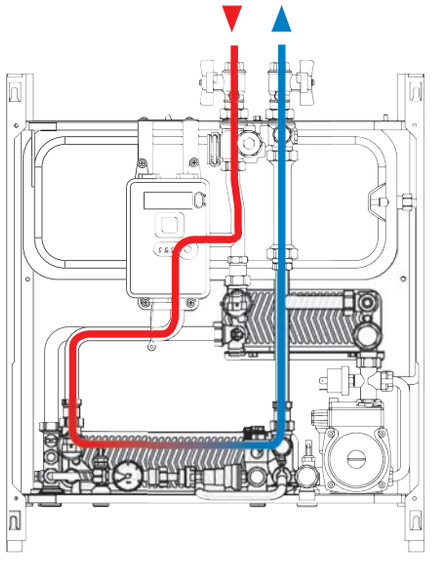
Head available at connections



Proportional head characteristics
Factory setting
Constant head characteristics

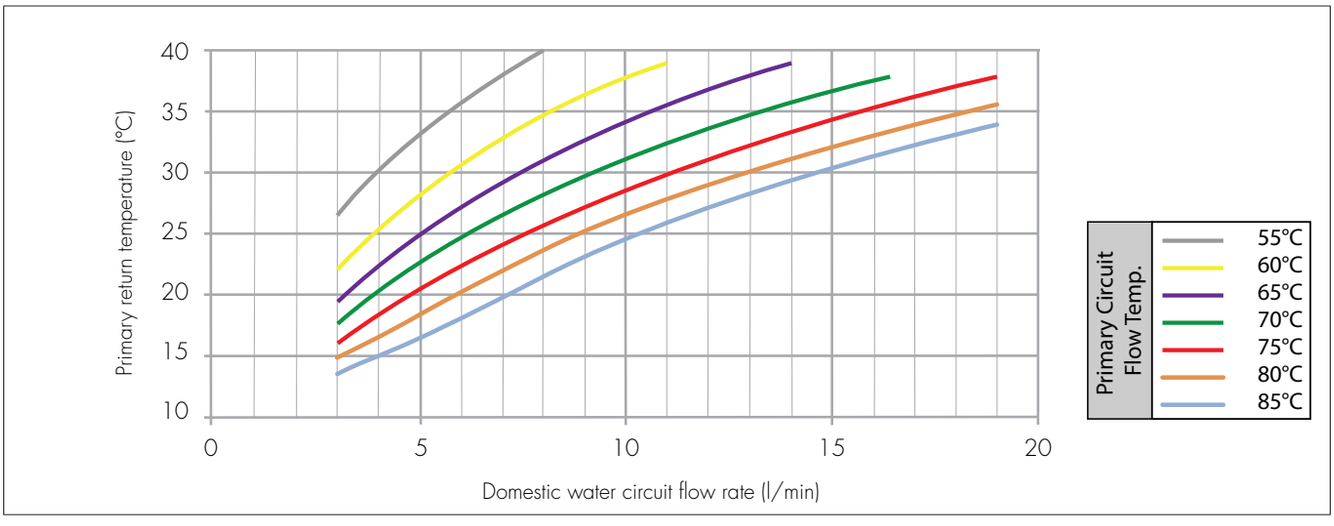
Domestic function - primary exchanger

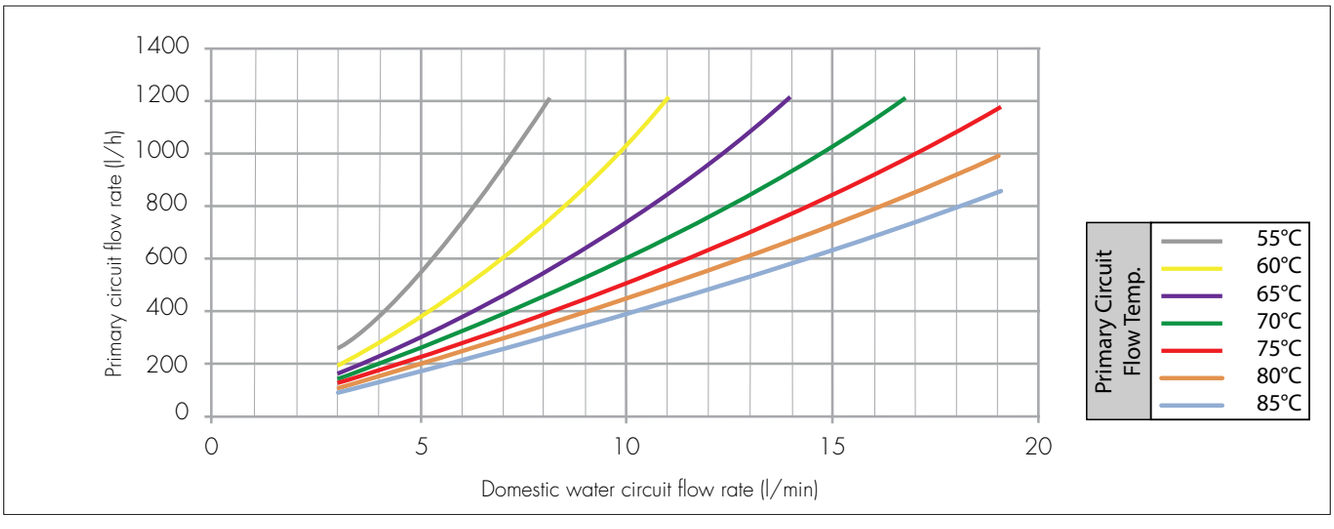




SATK20303 - SATK20.03HE - SATK30103HE DHW performance diagrams

DHW 10–48°C, maximum Δp 30 kPa



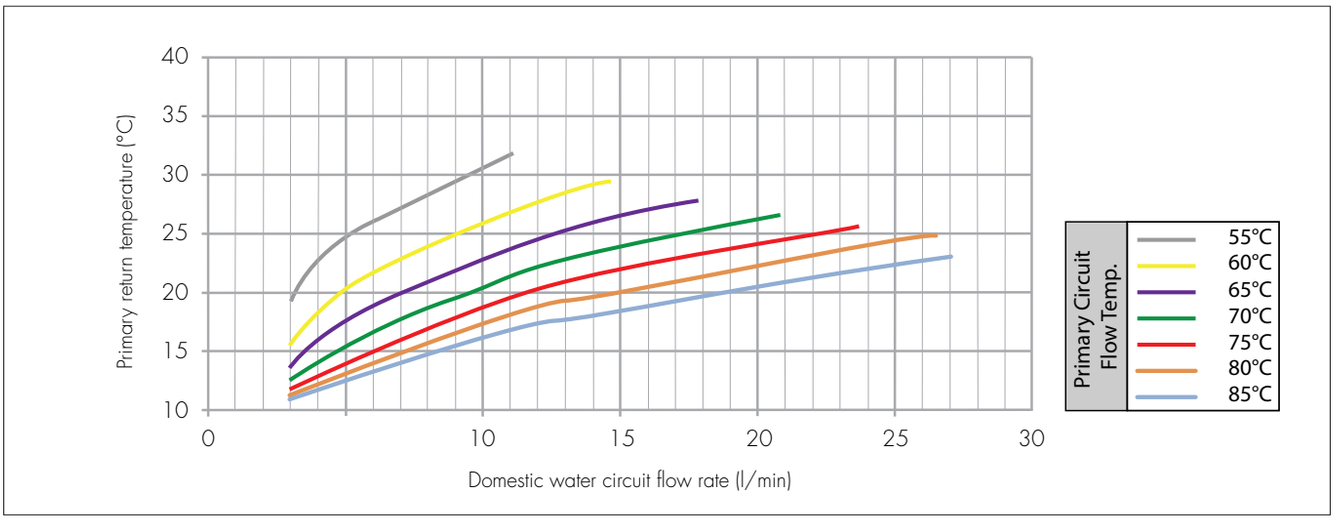


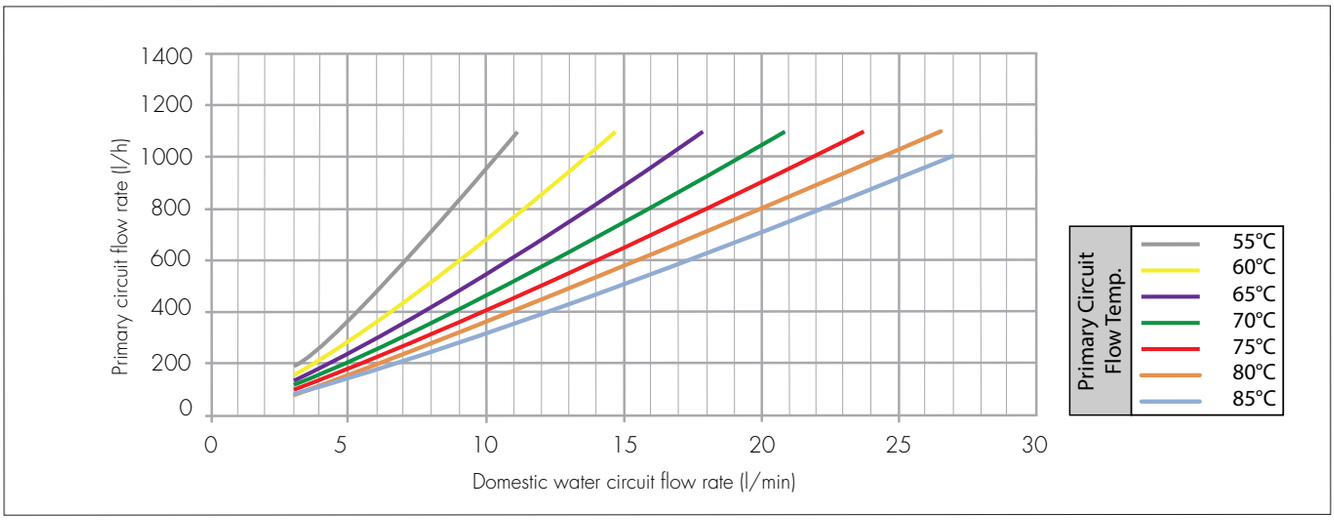
SATK20303 - SATK20.03HE - SATK30103HE DHW production performance table (max. primary circuit Δp 30 kPa)

Primary circuit temperature (°C)	Domestic water flow rate (l/min)	Primary return temperature (°C)	Primary flow rate (l/h)	Power output (kW)
55	8,1	39,6	1200	21,6
60	11,0	39,1	1200	29,2
65	13,9	38,7	1200	37,0
70	16,7	38,4	1200	44,3
75	19,0	37,9	1200	50,4
80	19,0	35,8	1200	50,4
85	19,0	33,9	1200	50,4

SATK20305 - SATK30105 DHW performance diagrams

DHW 10–48°C, maximum Δp 30 kPa



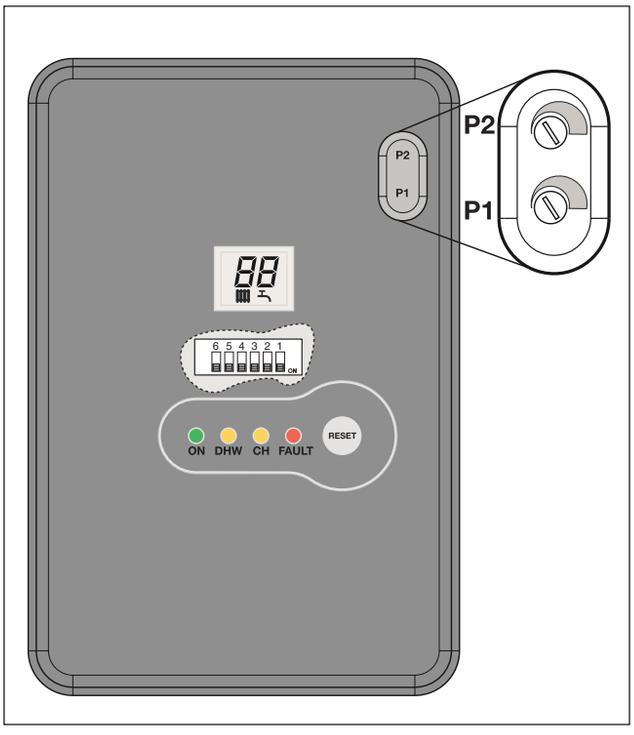


SATK20305 - SATK30105HE DHW production performance table (max. primary circuit Δp 30 kPa)

Primary circuit temperature (°C)	Domestic water flow rate (l/min)	Primary return temperature (°C)	Primary flow rate (l/h)	Power output (kW)
55	11,2	31,8	1100	29,6
60	14,8	29,4	1100	39,2
65	17,9	27,8	1100	47,5
70	20,9	26,6	1100	55,5
75	23,8	25,6	1100	63,1
80	26,6	24,8	1100	70,6
85	27,0	23,4	1000	77,8

A design focused on minimising the temperature of the primary return medium is, in general, essential to guaranteeing maximum condensing boiler efficiency and reducing heat loss across the distribution network. In modern housing units, the ever-increasing emphasis placed on energy performance tends to result in ever-decreasing space heating loads, while DHW production demand remains very high. The application of an exchanger with a high thermal length on the domestic circuit allows (in addition to the benefits already mentioned) a design aimed at achieving high temperature difference between primary flow and return, thereby reducing circulating flow rates and pipe diameters.

Electronic regulator



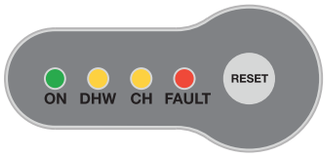
Operating principle
All heating and domestic hot water functions offered by SATK series HIUs are controlled by a digital temperature regulator.

Automatic controller functions

• Reset of mixing/modulating valves
Immediately after the power supply has been switched on, the position of the mixing/modulating valves is reset to fully closed position.
• Pump anti-seizing
When the pump is not in use, it is powered on for a period of 5 seconds every 24 hours.
• Diverter/modulating anti-seizing cycle
The anti-seizing cycle for the diverter/modulating valves is run every 24 hours.

User interface
The user interface, built into the PCB, consists of the following devices:

• LED indicator
The active functions and faults are signalled by either flashing or steady illumination of the LEDs.



ON - Electric supply 230 V (ac)
DHW - Domestic cycle
CH - Heating cycle
FAULT - Fault detected

• RESET key
This allows restoration of normal function after the safety thermostat has been triggered and activation/deactivation of the floor slab heating function.

• Trimmers for set point settings
They allow the setting of the temperature set-point for the operating cycles and view the relative value on the display.

DHW cycle

Heating cycle

• LCD display
Shows programmed set-point temperatures and error codes.

• DiP switches
Allow set-up of the various models and enabling of optional functions

Table 1 – factory default settings

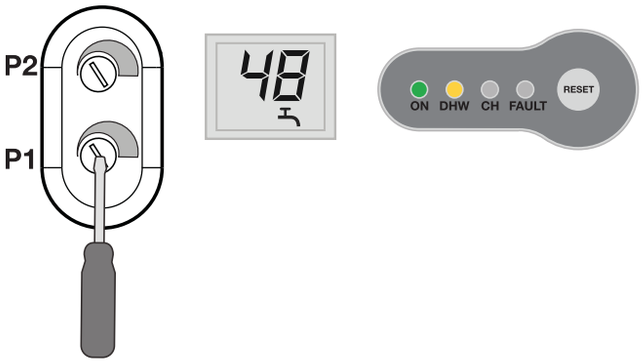
CODE	SWITCH SETTINGS						SET	
	6	5	4	3	2	1	HEATING	DHW
SATK20103HE LOW temperature							25–45°C	42–60°C
SATK20203HE MEDIUM temperature							45–75°C	42–60°C
SATK20303 - SATK20305 - SATK20403HE HIGH temperature							MAX 85°C	42–60°C
SATK30103HE - SATK30105HE LOW temperature setting							25–45°C	42–60°C
SATK30103HE - SATK30105HE HIGH temperature setting							45–75°C	42–60°C

Factory setting (do not modify)

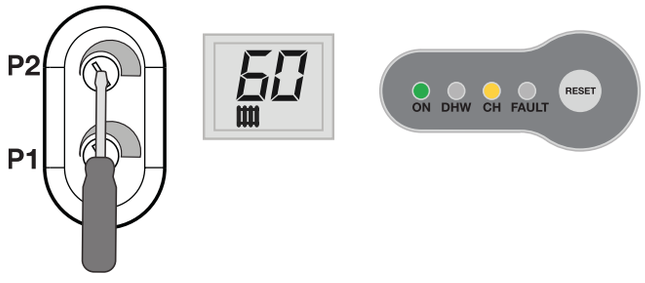
Can be modified to enable optional functions
Switch 1: Modulating temperature regulation with compensated set point.
Switch 5: Domestic water preheating function

Operating cycles

Domestic cycle
This cycle always takes priority over the heating cycle.
When DHW cycle activation is requested, due to DHW tapping by the user (detected by the domestic water flow meter), the regulator modulates the valve opening in order to adjust the temperature detected by the domestic water probe to the selected set point value. When tapping ends, the modulating valve is fully closed.
The active domestic hot water cycle is signalled by yellow DHW LED steady on.
The general domestic water cycle temperature set point can be set using trimmer P1 and shown on the display.



Heating cycle
Set point regulation
When heating cycle activation is requested by the room thermostat, the circulation pump is powered while the modulating valve is opened gradually until the set point temperature is reached.
At the end of the heating cycle, the circulation pump comes to a stop and the modulating valve is closed. The active heating cycle is signalled by lighting of the yellow CH LED.
The heating cycle temperature set point can be set using trimmer P2 and shown on the display.



Floor slab heating function
(SATK20103HE - SATK30 at LOW temperature setting)
Facilitates the installation of underfloor heating systems at low temperatures. This function can only be activated and executed if there are no faults.
It can be activated by pressing and holding the RESET button for 8 seconds.
The yellow CH LED blinks while the floor slab heating function is in operation.
The function lasts 240 hours and is carried out by simulating a request to run in heating mode starting from a set point of 25°C and rising in regular intervals to a temperature of 45°C. Once the maximum set point has been reached, the function is executed, following the same procedures, in reverse (from the maximum to the minimum set point).
This function has priority over heating and hot water cycles, and can be suspended at any time by pressing and holding the RESET button for 8 seconds.

Optional functions (to activate/deactivate the optional functions the electric power supply must always be turned off!)

Domestic cycle
DHW pre-heating function
The function is enabled by setting DIP switch 5 to the ON position.
During periods when the domestic water cycle is not used, if the DHW probe detects a temperature 10°C below the SET value, the controller partially opens the domestic hot water modulating valve for the time required (max. 5 min.) to bring the exchanger to the condition wherein it can assure rapid DHW production.
The domestic hot water pre-heating function is signalled by the flashing yellow DHW LED.
This function is less of a priority than any domestic water or heating cycles.

Heating cycle
Modulating temperature regulation with compensated set point (SATK20103HE - SATK20203HE - SATK30)
The function is enabled by setting DIP switch 1 to the OFF position.
When the function is enabled, the flow temperature is modified according to the temperature detected by the compensation probe (located on the user return pipe). This keeps the actual thermal output of the slab - and therefore the ambient thermal load - under control. The thermal response time of the system is thus minimised.
If the function is enabled the display shows the return temperature, and the flow temperature is adjusted in accordance with the following formula:

Flow temperature = Return temperature + ΔT
In **MEDIUM/HIGH** temperature configuration: ΔT = 5–25°C
At **LOW** temperature setting: ΔT = 4–10°C

Safety and alarms

Error codes associated with faults signalled by illumination of the FAULT LED are also shown on the display.

Heating circuit pressure switch fault (SATK30)
Error code 4

The electronic regulator continuously monitors the status of the pressure switch controlling the water pressure in the heating circuit.
If the pressure switch is activated, the heating circulation pump immediately comes to a stop and the modulating valve is completely closed.
This fault implies the stoppage of the heating cycle only.
Domestic water drawing requests will continue to be served normally.

N.B.: A low pre-charge value of the expansion vessel can cause a pressure switch fault.

Removing a fault
Return to the operating mode is subordinate to restoration of the correct water pressure in the secondary heating circuit (see instruction manual).

Probe fault
If a temperature probe fails, the associated cycle will be stopped immediately and disabled.
Any requests to run cycles not associated with the faulty probe one will continue to run normally.

Heating probe fault
Error code: 5

Domestic water probe fault
Error code: 6

Compensation probe fault
(SATK20103HE - SATK20203HE - SATK30)
Error code: 15

Removing a fault
Normal operating conditions are restored automatically once the faulty probe is working properly again (see page 12 - “Temperature probe replacement”).

Safety thermostat cut-out
(SATK20103HE - SATK30 at LOW temperature setting)
Error code 69

The HIUs configured to support low temperature heating continuously monitor the safety thermostat controlling the flow temperature.
If the safety thermostat is triggered during a general cycle, the heating circulation pump immediately comes to a stop and the modulating valve is completely closed.
After the user has reset the thermostat, operation can only be re-enabled when the modulating valves are completely closed again.
This means that if a domestic water cycle is in progress, the activation of the shut-off valve will be postponed until the end of that domestic water cycle.

Removing a fault
To restore the operating mode press the manual RESET button.

Safety valve fault
(SATK20103HE)
Error code 76

Incorrect switch setting
Error code 79

Removing a fault
Restore the correct switch setting in accordance with the procedure shown on the instruction manual.

Incorrect switch setting (heat interface unit disabled)
Error code 80

Removing a fault
The heat interface unit is disabled due to incorrect setting of the DiP-switches. Restore the correct switch setting in accordance with the procedure shown on the instruction manual.

WALL-MOUNTED HEAT INTERFACE UNIT
COMPLETION CODES SATK20 - SATK30 - SATK40 SERIES

789540

Recessed meter box with galvanized base and painted door
for interiors (RAL 9010) and finishing frame.

Includes:
- pair of 3/4" M manual shut-off valves,
- pair of temperature pockets,
- heat meter template,
- fittings for DCW.

Code	Connection	Dimensions (mm)
789540	3/4"	350 x 380 x 110
789540 002	3/4"	276 x 400 backplate only

7554

Direct heat meter for SATK series and/or meter box code 789540.
Equipped with an 8-digit liquid crystal display.
24 V (ac) 50 Hz - 1 W centralized electric supply.

Complies with directive 2004/22/CE (MI004)

Code	Connection	Meas. type	Q_{nom} m³/h	Q_{min} l/h
755405K	3/4"	single nozzle	2,5	50

789

Secondary circuit ball shut off valve kit for SATK20/30 with:
- ball shut off valves with 3/4" nut,
- fiber gaskets,
- red/blue handles.

Max operating pressure: 10 bar
Operating temperature range: 5–90°C
Medium: water and glycol solutions (max 30%)

Code	Use with
789103	SATK20/30 (4 valves kit)

789

OPEN THERM® chrono-thermostat
for remote control of SATK20/30.
- LCD display for information visualisation with user friendly interface,
- NIGHT and DAY set point temperature, with anti-freeze protection,
- weekly heating program.

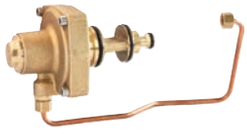
Code
789724

7890

Hydraulic backplate painted in RAL 9010, including bottom-up system connection pipes.
Includes:
- frame,
- steel pipes,
- air vent ,
- pair of 3/4" M manual shut-off valves.

Depth: 60 mm.

Code	Use with
789020	SATK20
789030	SATK30



789

Differential pressure control valve
Brass body.
Max operating pressure: 16 bar.
Max Δp upstream: 6 bar.
Δp downstream: 40 kPa.

Code
789603

789100

Flushing valve with manual by-pass.
System connection: 3/4" M.
User connection: 3/4" M.

Code	Use with
789100	SATK20 - SATK30

794

DHW recircuation kit for SATK20 and SATK30 series HIUs.
Complete with:
- steel pipes,
- fitted for connection of a 1/2" DCW meter,
- ball shut off valve on recirculation connection,
- brass fitting with non-return valve on DCW circuit.

NB.: a second non-return valve on the recirculation circuit must be fitted

Code
794530

SPECIFICATION SUMMARY

Code SATK20103HE

Wall-mounted, two-way heat interface unit for low temperature heating with set point regulation (25–45°C) and instantaneous domestic hot water production (42–60°C), including: electronic regulator, thermal safety shut-off valve, thermal safety thermostat, heating mixing valve, heating temperature probe, UPM3 15-70 pump with safety by-pass, template for heat meter, DHW production modulating valve, DHW temperature probe, plate heat exchanger, flow temperature compensation probe, DHW priority flow meter, air vent cock, strainer, domestic water preheating function, dimensions L 450 x H 550 x D 265 mm. Medium: water. Maximum percentage of glycol: 30%. Maximum medium temperature: 85°C. Maximum working pressure: - primary circuit: 10 bar, domestic circuit: 10 bar. Nominal DHW exchanger capacity: 40 kW. Maximum recommended primary circuit flow rate: 1,2 m^3/h. Maximum DHW circuit flow rate: 18 l/min. Minimum flow to activate domestic flow meter: 2,7 l/min ±0,3. Maximum pressure differential on modulating valve: 90 kPa (0,9 bar). Maximum pressure differential on mixing valve: 90 kPa (0,9 bar). Electric supply: 230 V (ac) ±10% 50 Hz. Max power consumption: 80 W. Protection class: IP 40. Actuators: stepper 24 V. Probes: NTC 10 kΩ. Materials: components: brass EN 12165 CW617N. Connection pipes: steel, grey EPP cover.

Code SATK20203HE

Wall-mounted, two-way heat interface unit for medium temperature heating with set point regulation (45–75°C) and instantaneous domestic hot water production (42–60°C), including: electronic regulator, heating mixing valve, heating temperature probe, UPM3 15-70 pump with safety by-pass, template for heat meter, DHW production modulating valve, DHW temperature probe, plate heat exchanger, flow temperature compensation probe, DHW priority flow meter, air vent cock, strainer, domestic water preheating function, dimensions L 450 x H 550 x D 265 mm. Medium: water. Maximum percentage of glycol: 30%. Maximum medium temperature: 85°C. Maximum working pressure: - primary circuit: 10 bar, domestic circuit: 10 bar. Nominal DHW exchanger capacity: 40 kW. Maximum recommended primary circuit flow rate: 1,2 m^3/h. Maximum DHW circuit flow rate: 18 l/min. Minimum flow to activate domestic flow meter: 2,7 l/min ±0,3. Maximum pressure differential on modulating valve: 90 kPa (0,9 bar). Maximum pressure differential on mixing valve: 90 kPa (0,9 bar). Electric supply: 230 V (ac) ±10% 50 Hz. Max power consumption: 80 W. Protection class: IP 40. Actuators: stepper 24 V. Probes: NTC 10 kΩ. Materials: components: brass EN 12165 CW617N. Connection pipes: steep, grey EPP cover.

Code SATK20303

Wall-mounted, two-way heat interface unit for high temperature heating with ON/OFF regulation and instantaneous domestic hot water production (42–60°C), including: electronic regulator, heating valve, template for heat meter, DHW production modulating valve, DHW temperature probe, plate heat exchanger, DHW priority flow meter, air vent cock, strainer, domestic water preheating function, dimensions L 450 x H 550 x D 265 mm. Medium: water. Maximum percentage of glycol: 30%. Maximum medium temperature: 85°C. Maximum working pressure: - primary circuit: 10 bar, domestic circuit: 10 bar. Nominal DHW exchanger capacity: 40 kW. Maximum recommended primary circuit flow rate: 1,2 m^3/h. Maximum DHW circuit flow rate: 18 l/min. Minimum flow to activate domestic flow meter: 2,7 l/min ±0,3. Maximum pressure differential on modulating valve: 90 kPa (0,9 bar). Maximum pressure differential on ON/OFF valve: 90 kPa (0,9 bar). Electric supply: 230 V (ac) ±10% 50 Hz. Max power consumption: 20 W. Protection class: IP 40. Actuators: stepper 24 V. Probes: NTC 10 kΩ Materials: components: brass EN 12165 CW617N. Connection pipes: steel, grey EPP cover.

Code SATK20403HE

Wall-mounted, two-way heat interface unit for high temperature heating with ON/OFF regulation and instantaneous domestic hot water production (42–60°C), including: electronic regulator, heating valve, template for heat meter, DHW production modulating valve, DHW temperature probe, plate heat exchanger, DHW priority flow meter, air vent cock, strainer, domestic water preheating function, pump on the primary side, dimensions L 450 x H 550 x D 265 mm. Medium: water. Maximum percentage of glycol: 30%. Maximum medium temperature: 85°C. Maximum working pressure: - primary circuit: 10 bar, domestic circuit: 10 bar. Nominal DHW exchanger capacity: 40 kW. Maximum recommended primary circuit flow rate: 1,2 m^3/h. Maximum DHW circuit flow rate: 18 l/min. Minimum flow to activate domestic flow meter: 2,7 l/min ±0,3. Maximum pressure differential on modulating valve: 90 kPa (0,9 bar). Maximum pressure differential on ON/OFF valve: 90 kPa (0,9 bar). Electric supply: 230 V (ac) ±10% 50 Hz. Max power consumption: 80 W. Protection class: IP 40. Pump: UPM3 15-70. Actuators: stepper 24 V. Probes: NTC 10 kΩ. Materials: components: brass EN 12165 CW617N. Connection pipes: steel, grey EPP cover.

Code SATK20305

Wall-mounted, two-way heat interface unit for high temperature heating with ON/OFF regulation and instantaneous domestic hot water production (42–60°C), including: electronic regulator, heating valve, template for heat meter, DHW production modulating valve, DHW temperature probe, plate heat exchanger, DHW priority flow meter, air vent cock, strainer, domestic water preheating function, dimensions L 450 x H 550 x D 265 mm. Medium: water. Maximum percentage of glycol: 30%. Maximum medium temperature: 85°C. Maximum working pressure: - primary circuit: 10 bar, domestic circuit: 10 bar. Nominal DHW exchanger capacity: 65 kW. Maximum recommended primary circuit flow rate: 1,2 m^3/h. Maximum DHW circuit flow rate: 27 l/min. Minimum flow to activate domestic flow meter: 2,7 l/min ±0,3. Maximum pressure differential on modulating valve: 90 kPa (0,9 bar). Maximum pressure differential on ON/OFF valve: 90 kPa (0,9 bar). Electric supply: 230 V (ac) ±10% 50 Hz. Max power consumption: 20 W. Protection class: IP 40. Actuators: stepper 24 V. Probes: NTC 10 kΩ Materials: components: brass EN 12165 CW617N. Connection pipes: steel, grey EPP cover.

Code SATK30103HE

Wall-mounted, two-way indirect heat interface unit for low temperature heating with set point regulation (25–45°C)/medium temperature with set point regulation (45–75°C) and instantaneous domestic hot water production (42–60°C), including: electronic regulator, thermal safety thermostat, heating modulating valve, heating temperature probe, UPM3 15-70 pump with safety by-pass, template for heat meter, DHW production modulating valve, DHW temperature probe, plate heat exchanger, flow temperature compensation probe, DHW priority flow meter, air vent cock, strainer, filling unit with backflow preventer, safety relief valve set at 0,3 MPa (3 bar), expansion vessel (7 l), pressure switch, pressure gauge, domestic water preheating function, dimensions L 550 x H 630 x D 265 mm. Medium: water. Maximum percentage of glycol: 30%. Maximum medium temperature: 85°C. Maximum working pressure: - primary circuit: 16 bar, secondary circuit: 3 bar, domestic circuit: 10 bar. Nominal DHW exchanger capacity: 40 kW. Nominal heating exchanger capacity: 15 kW. Maximum recommended primary circuit flow rate: 1,2 m^3/h, Maximum domestic circuit flow rate: 18 l/min. Minimum flow to activate domestic flow meter: 2,7 l/min ±0,3. Maximum pressure differential on modulating valves: 90 kPa (0,9 bar). Electric supply: 230 V (ac) ±10% 50 Hz. Max power consumption: 80 W. Protection class: IP 40. Actuators: stepper 24 V. Probes: NTC 10 kΩ. Materials: components: brass EN 12165 CW617N. Connection pipes: steel, grey EPP cover.

Code SATK30105HE

Wall-mounted, two-way indirect heat interface unit for low temperature heating with set point regulation (25–45°C)/medium temperature with set point regulation (45–75°C) and instantaneous domestic hot water production (42–60°C), including: electronic regulator, thermal safety thermostat, heating modulating valve, heating temperature probe, UPM3 15-70 pump with safety by-pass, template for heat meter, DHW production modulating valve, DHW temperature probe, plate heat exchanger, flow temperature compensation probe, DHW priority flow meter, air vent cock, strainer, filling unit with backflow preventer, safety relief valve set at 0,3 MPa (3 bar), expansion vessel (7 l), pressure switch, pressure gauge, domestic water preheating function, dimensions L 550 x H 630 x D 265 mm. Medium: water. Maximum percentage of glycol: 30%. Maximum medium temperature: 85°C. Maximum working pressure: - primary circuit: 16 bar, secondary circuit: 3 bar, domestic circuit: 10 bar. Nominal DHW exchanger capacity: 165 kW. Nominal heating exchanger capacity: 15 kW. Maximum recommended primary circuit flow rate: 1,2 m^3/h, Maximum domestic circuit flow rate: 27 l/min. Minimum flow to activate domestic flow meter: 2,7 l/min ±0,3. Maximum pressure differential on modulating valves: 165 kPa (1,65 bar). Electric supply: 230 V (ac) ±10% 50 Hz. Max power consumption: 80 W. Protection class: IP 40. Actuators: stepper 24 V. Probes: NTC 10 kΩ. Materials: components: brass EN 12165 CW617N. Connection pipes: steel, grey EPP cover.

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