

# SATK Indirect wall-mounted heat interface unit

## Instantaneous DHW production

### SATK30105 series



#### Characteristics

The SATK30105 HIU is the most compact, complete and efficient solution for use in:

- systems connected to the district heating without building substations;
- centralised systems that require high static pressures or medium temperatures, which are not suitable for use in domestic systems and constitute a potential hazard.

The SATK30 series heat interface unit keeps the primary and secondary water completely separate.

This type of device is useful when designing or redesigning the heating and domestic hot water systems of apartment buildings under renovation, as well as facilitating any maintenance required in the individual dwellings, as it eliminates the risk of impurities contaminating the entire centralised distribution network.

The electronic regulator controls the secondary circuit flow temperatures, acting on the primary circuit flow rates by means of modulating valves. A high-performance exchanger for DHW production helps to minimise the central heating system return temperature, allowing a significant reduction in primary circulation flow rates.

This leads to lower energy needs for pumping, in addition to benefits in terms of lower costs of the primary distribution system.

#### Product range

**SATK30105** Indirect wall-mounted HIU, instantaneous DHW production.

**SATK30105HE** Indirect wall-mounted HIU, instantaneous DHW production. Version with high-efficiency pump.

#### Technical specifications

##### Materials

Components:	brass EN 12165 CW617N
Connection pipes:	steel
Frame:	painted steel RAL 9010
Protective shell cover:	EPP
Exchanger:	brazed stainless steel

##### Performance

Medium:	water
Max. percentage of glycol:	30%
Max. medium temperature:	85°C
Max. working pressure	- primary circuit: 16 bar
	- secondary circuit: 3 bar
	- domestic circuit: 10 bar
Nominal heating exchanger capacity:	15 kW
Nominal DHW exchanger capacity:	70 kW (prim. 80°C)
Domestic circuit maximum flow rate:	27 l/min (prim. 80°C)
Minimum flow to activate domestic water flow meter:	2,7 l/min $\pm 0,3$

Maximum recommended primary circuit flow rate:	1,2 m <sup>3</sup> /h
Max. differential pressure:	1,65 bar
Electric supply:	230 V (ac) $\pm 10\%$ 50 Hz
Power consumption:	- SATK30105: 105 W
	- SATK30105HE: 75 W
Protection class:	IP 40
Pump:	- SATK30105: UPS 15-60
	- SATK30105HE: UPS2 15-60
Pump by-pass setting:	0,45 bar
Actuators:	stepper 24 V
Temperature probes:	NTC 10 k $\Omega$
Safety relief valve setting:	3 bar
Safety thermostat cutout:	55°C $\pm 3$
Expansion vessel:	- capacity: 7 l
	- pre-charge value: 1 bar
Pressure switch:	- opening: 0,4 bar
	- closing: 0,8 bar

## Operating features

### Standard functions

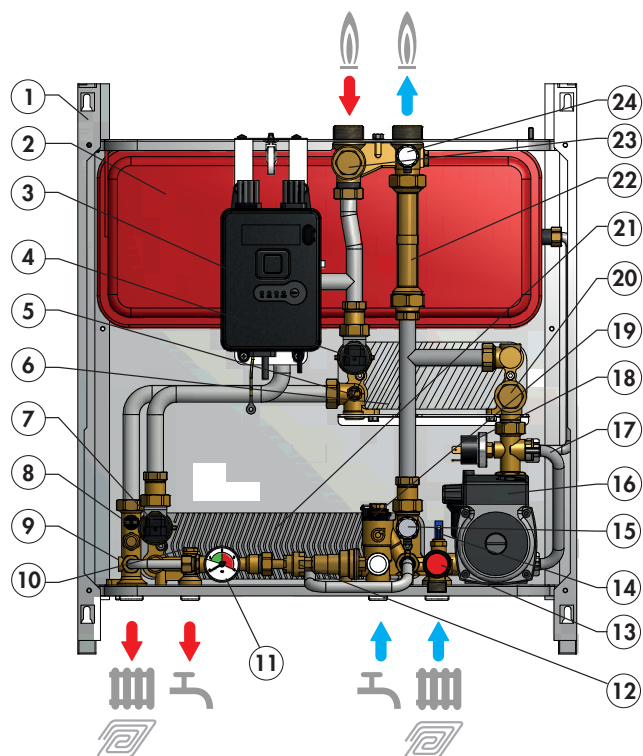
- Heating range
  - LOW temperature configuration 25–45°C
  - MEDIUM/HIGH temperature configuration 50–75°C
- Set point regulation
- DHW production range 42–60°C

### Optional functions

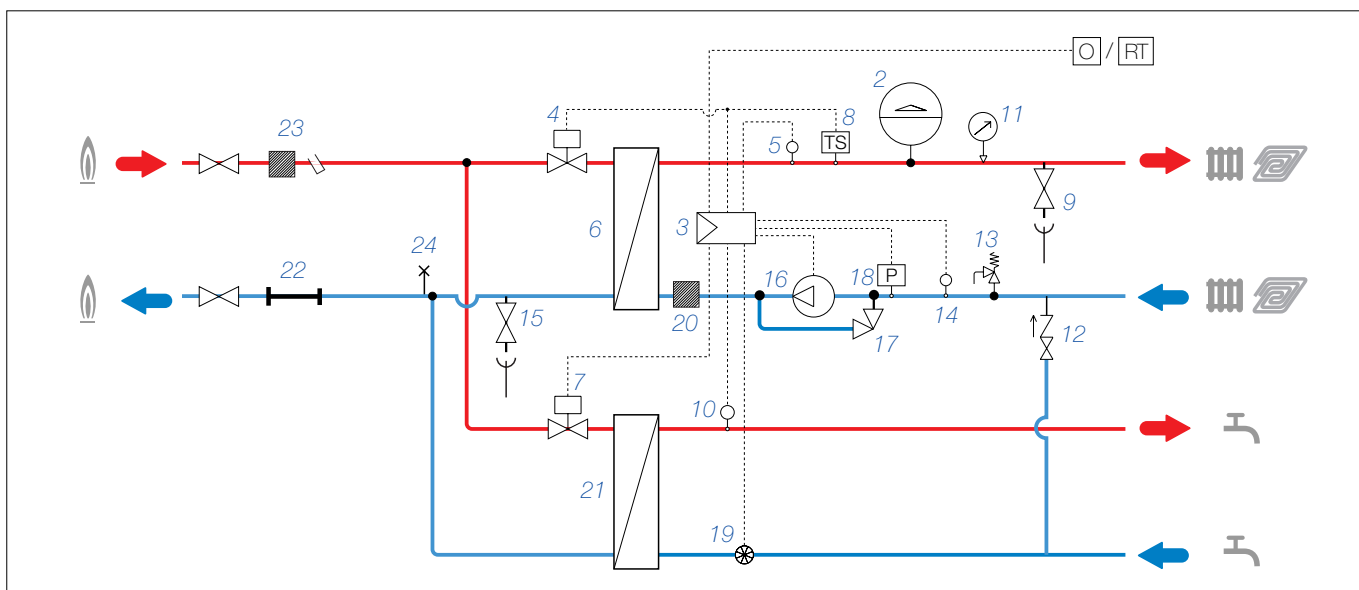
- Domestic cycle:
- DHW preheating function
- Heating cycle
- modulating temperature regulation with compensated set point
  - floor slab heating function

### Characteristic components

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



### Hydraulic-functional diagram



## Operating cycles

### Domestic cycle

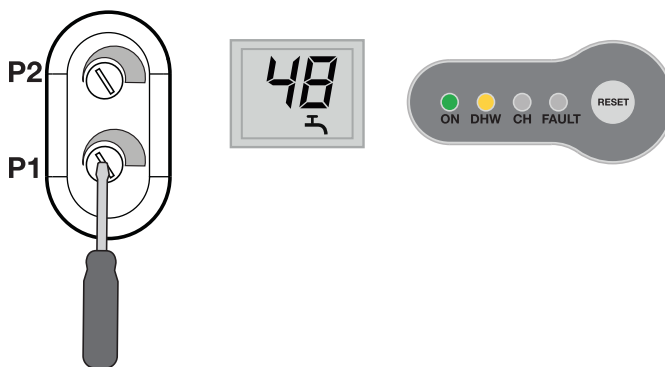
**This cycle always takes priority over the heating cycle.**

When the flow meter (19) detects that the user is requesting DWH the controller commands the opening of the modulating valve (7) so as to adjust the temperature detected by the domestic water probe (10) to the selected set point value.

When tapping ends, the modulating valve is fully closed.

The active domestic water cycle is signalled by the yellow DHW LED which comes on.

The general domestic water cycle temperature set point can be set using trimmer P1 and shown on the display.



### Heating cycle

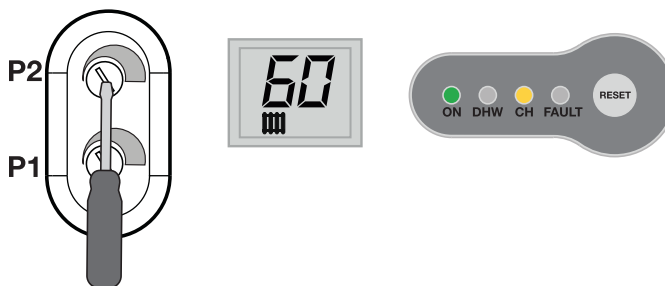
#### Set point regulation

When heating cycle activation is requested by the room thermostat, the circulation pump (16) is powered while the modulating valve (4) 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 the yellow CH LED which comes on.

The heating cycle temperature set point can be set using trimmer P2 and shown on the display.



### Floor slab heating function

#### (in LOW temperature configuration)

This facilitates the laying 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 has a duration of 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 set point to the minimum set point).

This function has priority over heating and domestic water cycles, and can be suspended at any time by pressing and holding the RESET button for 8 seconds.



### Domestic cycle

#### DHW preheating 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 (10) detects a temperature 10°C below the SET value, the controller partially opens the domestic water modulating valve (7) for the time required (max. 5 mins) to bring the temperature detected up to a value 5°C below the set point value.

The domestic water preheating function is signalled by the flashing yellow DHW LED.

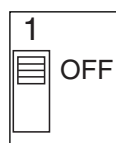
This function is less of a priority than any domestic water or heating cycles.



### Heating cycle

#### Modulating temperature regulation with compensated set point

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 (14). 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.

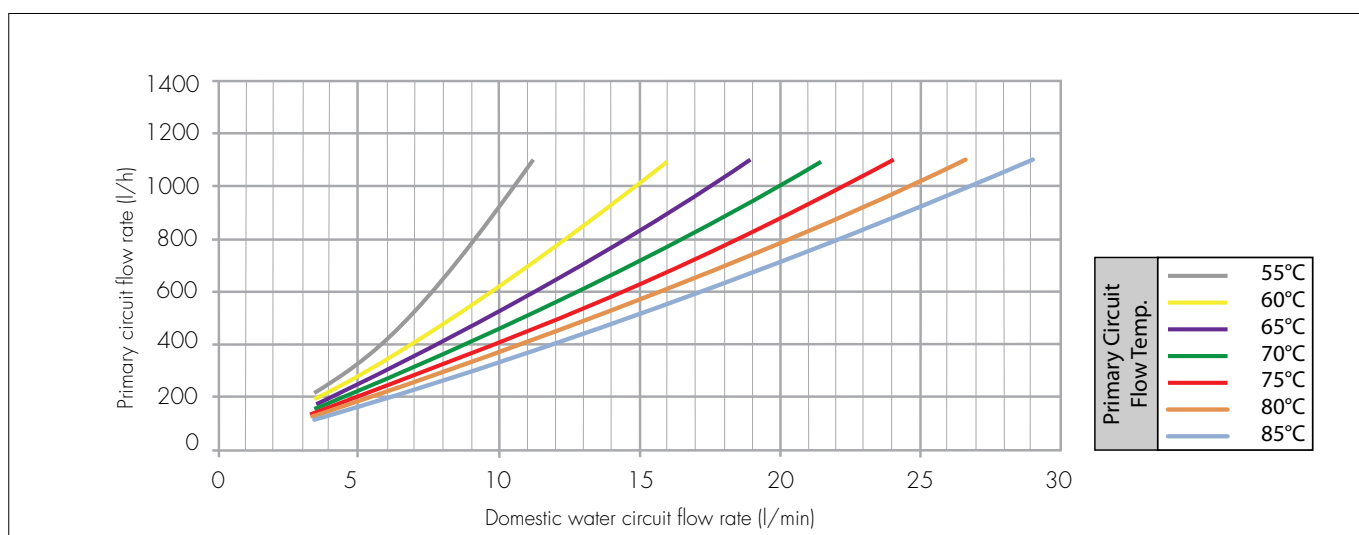
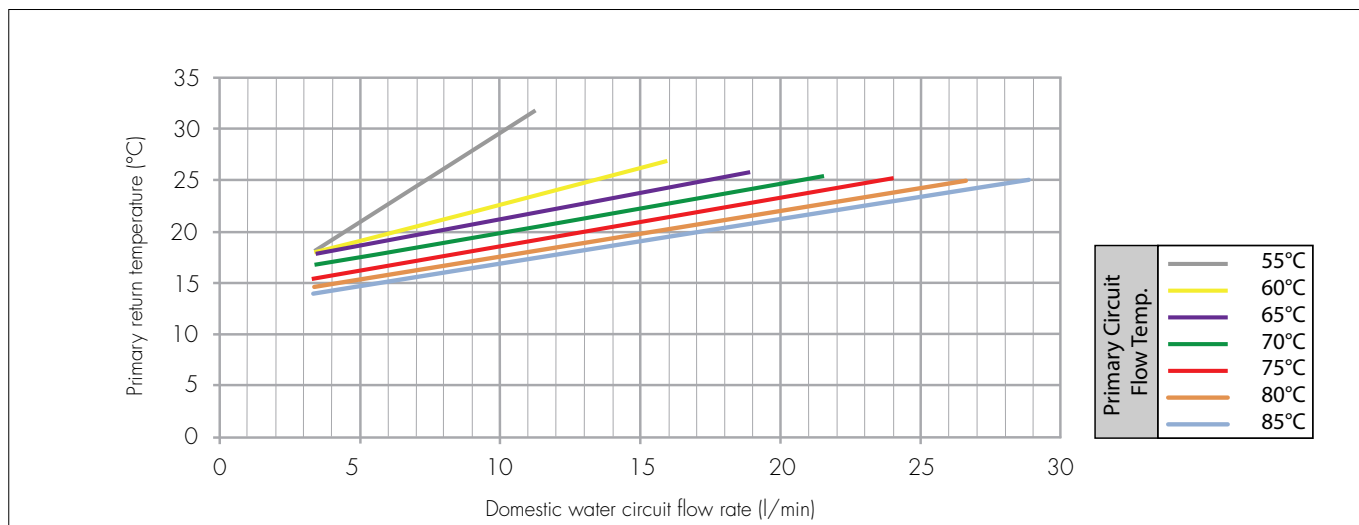


### Safety and alarms

Error codes associated with faults signalled by the lighting up of the FAULT LED are also shown on the display (see instruction manual).

## SATK30105 series DHW performance diagrams

DHW 10–48°C, maximum  $\Delta p$  30 kPa



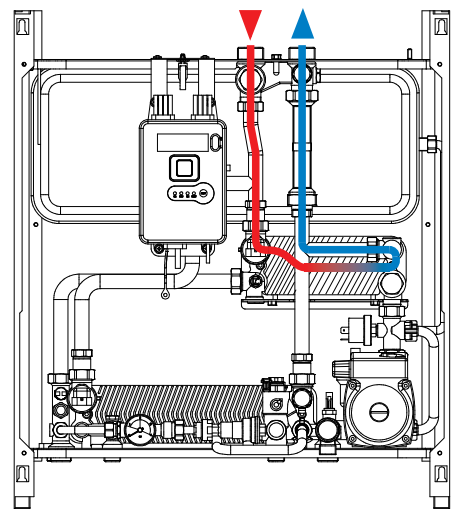
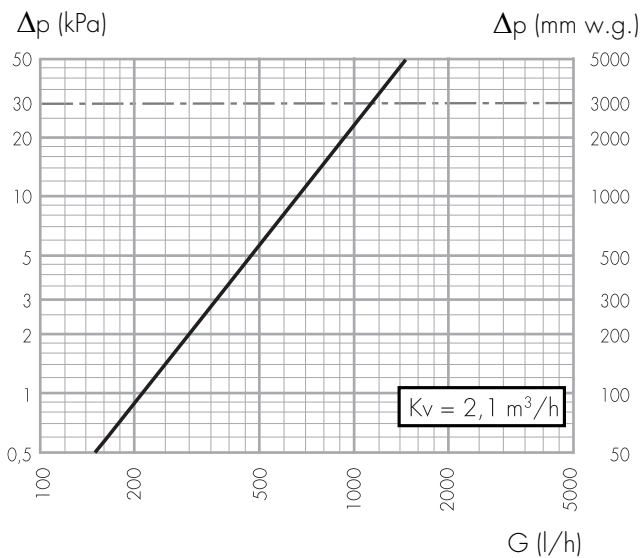
## SATK30105 series DHW production performance table (max. primary circuit $\Delta p$ 30 kPa)

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	31,7	1095	29,6
60	15,9	26,9	1095	42,1
65	18,8	25,8	1095	49,9
70	21,5	25,3	1095	56,9
75	23,9	25,2	1095	63,5
80	26,5	24,9	1095	70,2
85	28,8	25,0	1095	76,4

A design focused on minimising the temperature of the primary return medium is, in general, essential to guaranteeing maximum condensing generator 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.

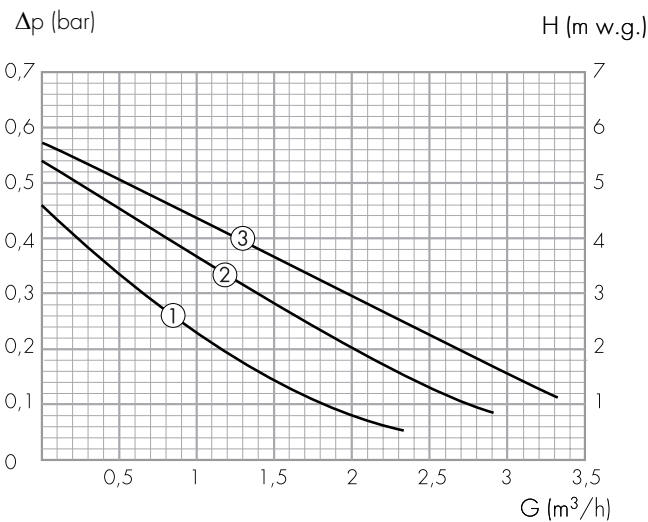
Hydraulic characteristics

Heating function - primary circuit

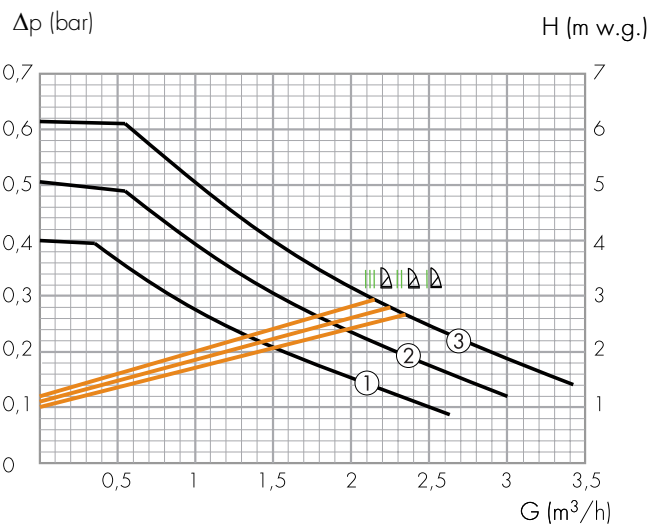


Pump fluid-dynamic characteristics

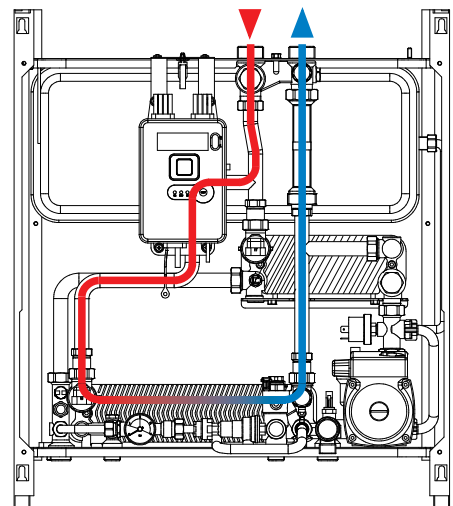
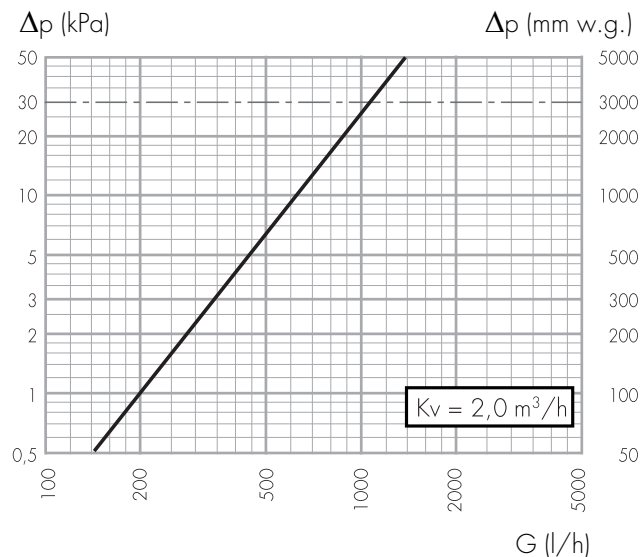
Pump: UPS 15-60 (SATK30105)



Pump: UPS2 15-60 (SATK30105HE)



DHW function - primary circuit



## Minimising of return temperature and utilisation of renewable energy

The modulating two-way electronic adjustment guarantees DHW production directly at the temperature set using the electronic regulator, without needing to subsequently lower the value by means of a thermostatic mixing valve. This means the domestic water inside the exchanger, as well as the primary return, is at the lowest possible temperature; the thermal exchange efficiency is maximised while the risk of limescale deposits forming is minimised.

SATK30105 heat interface unit is a modulating two-way system which guarantees a very cool central heating system return, allowing broader usage of alternative energies in the context of a central heating system.

It is just a matter of replacing the traditional domestic water storage with a technical water storage unit, which furthermore does not present any of the problems linked to the Legionella bacteria.

## Central heating system diagram for variable flow rate systems with boiler and solar thermal integration

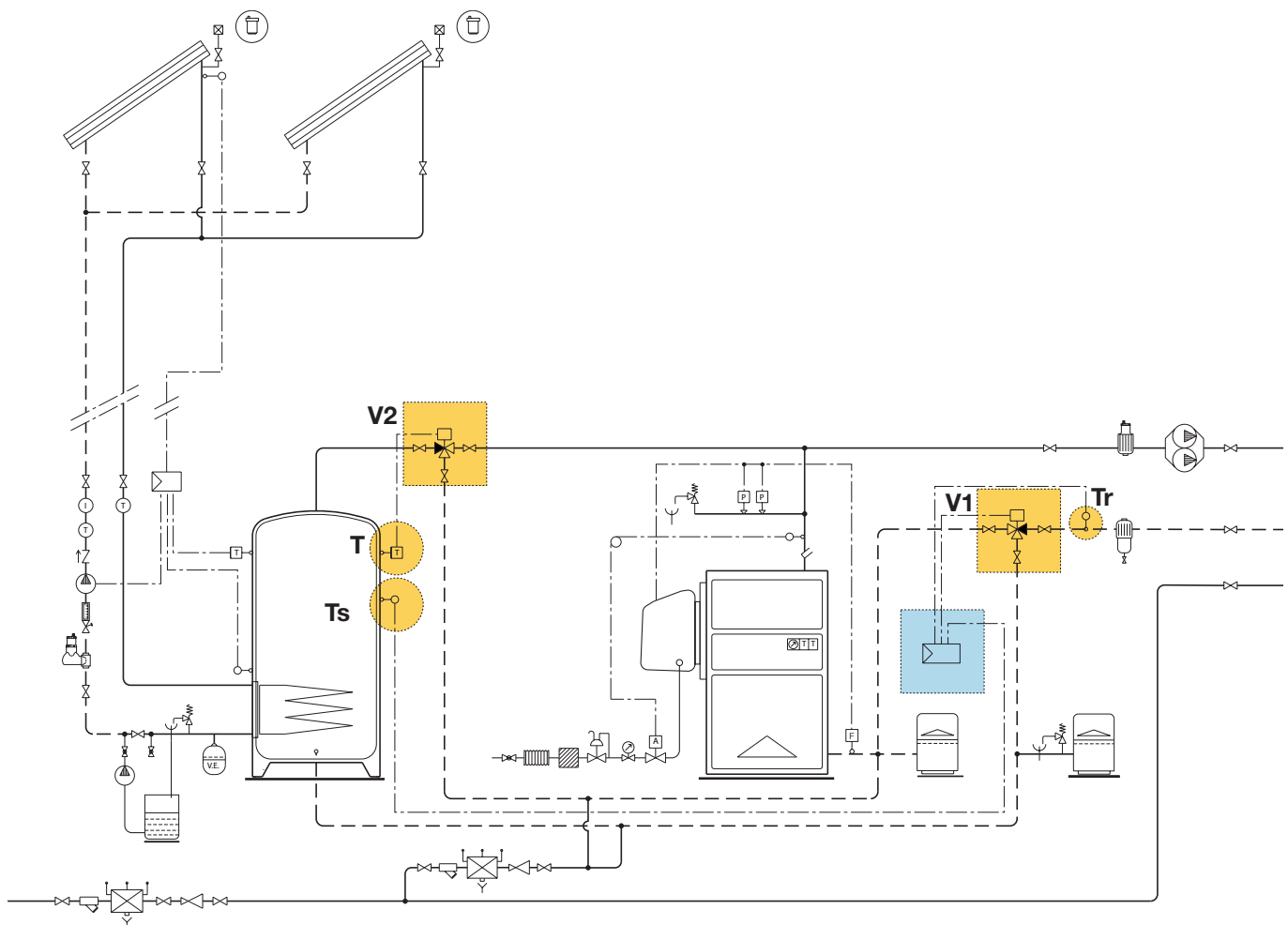
The system comprises:

- boiler;
- solar thermal system consisting of solar collectors, a coil storage unit, a circulation pump, control electronics;
- **two three-way diverter valves (V1 and V2);**
- variable flow rate twin circulation pump;
- **differential thermostat (Ts, Tr);**
- expansion, safety and control devices.

When the storage temperature (Ts) rises above the temperature returning from the system (Tr), the differential thermostat commands a three-way valve (V1) that diverts circulation of the medium towards the boiler heated by the solar thermal system; otherwise, the medium is sent directly to the boiler.

The thermostat on the boiler (T) commands a second three-way diverter valve (V2) that diverts the flow directly into the delivery section of the system when the design temperature is exceeded; otherwise the flow is diverted to the boiler.

Note: The control, expansion and safety devices must be of an appropriate size to reflect the characteristics and capacity of the system, in accordance with applicable legislation.



## Completion codes

### 789540



Recess mounting meter box with galvanized base and door painted in RAL 9010 **for interior use.**

Includes:

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

Code	Connection	Size (mm)
<b>789540</b>	3/4"	350 x 380 x 110

### 789540 002



Galvanized sheet metal meter plate.

Includes:

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

Code	Connection	Size (mm)
<b>789540 002</b>	3/4"	276 x 400

### 789



Hydraulic backplate painted in RAL 9010, including bottom-up system connection.

Includes:

- finishing frame
- steel pipes
- 3/4" M manual shut-off valves

Depth: 60 mm

Code

**789030**

### 7554 CONTECA® direct heat meter

Direct heat meter for SATK series and/or meter box code 789540.

Equipped with an 8-digit liquid crystal display.

**Centralised electric supply 24 V (ac) 50 Hz - 1 W.**



**Conforms to directive  
2004/22/EC (MI004)**



Code	Connection	Meas. type	Q <sub>nom</sub> m³/h	Q <sub>min</sub> l/h
<b>755404K</b>	1/2"	single nozzle	1,5	30
<b>755405K</b>	3/4"	single nozzle	2,5	50

### 789100



System flushing valve with manual bypass control.

System side connections: 1" M.

User side connections: 3/4" M.

Code

**789100**

### 794



Kit for domestic circuit with recirculation, for application to SATK20 and SATK30 series.

Includes:

- steel connection pipes
- 1/2" fittings for DCW volume meter
- ball shut-off valve on recirculation circuit
- brass fitting with non-return on DCW circuit

**N.B.: another non-return valve is required on the recirculation circuit.**

Code

**794530**



## SPECIFICATION SUMMARY

### Code **SATK30**105/105HE

Wall-mounted, two-way indirect heat interface unit (double exchanger) for low temperature heating with set point regulation (25–45°C), medium temperature with set point regulation (50–75°C) and instantaneous domestic hot water production (42–60°C), including: electronic controller, thermal safety thermostat, heating modulating valve, heating temperature probe, UPS 15-60 pump (UPS2 15-60 on SATK30105HE) with safety by-pass, fittings for heat meter, DHW production modulating valve, DHW temperature probe, 2 plate heat exchangers, flow temperature compensation probe, DHW priority flow meter, air vent cock, strainer, filling unit with backflow preventer, safety relief valve (3 bar), expansion vessel (7 l), pressure switch, pressure gauge, domestic water preheating function, floor slab heating 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, primary circuit: 3 bar, domestic circuit: 10 bar. Nominal DHW exchanger capacity: 70 kW (primary flow 80°C, DHW 10–48°C). Nominal heating exchanger capacity: 15 kW, maximum recommended primary circuit flow rate: 1,2 m³/h Maximum. DHW circuit flow rate: 27 l/min (primary flow 80°C, DHW 10–48°C). Minimum flow to activate domestic flow meter: 2,7 l/min ±0,3. Maximum differential pressure on modulating valves: 1,65 bar, electric supply: 230 V (ac) ±10% 50 Hz. Power consumption: 105 W (SATK30105HE: 75 W). Protection class: IP 40. Pump: UPS 15-60 (SATK30105HE: UPS2 15-60). Motors: stepper 24 V. Probes: NTC 10 kΩ. Materials: components: brass EN 12165 CW617N. Connection pipes: steel, grey PPE cover.

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